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Active Self-Transcendence Within the Scientific Perspective of Emergence

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ACTIVE SELF-TRANSCENDENCE
WITHIN THE SCIENTIFIC PERSPECTIVE OF EMERGENCE

A thesis by

Lawrence Ng Yew Kim

presented to

The Faculty of the

Jesuit School of Theology of Santa Clara University

in partial fulfillment of the

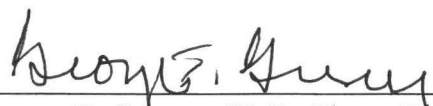
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Introduction

There has been a long history in Christianity on the study of the relationship between theology and science. For example, the Greek Fathers “pursued scientific knowledge for its theological and moral use.”¹ Even Augustine, who had an “ambivalent attitude toward science,” used natural science to oppose astrology, grounding his argument “by reference to observable reality.”² In recent years, there have been efforts to relate theology and science in various ways.³ One of the on-going scientific discussions is the question of how something can arise and develop into something else in the universe. Among the theories that address this question is the scientific perspective of ‘emergence’, which was developed within an evolutionary understanding of the world. The scientific perspective of emergence is a framework to help one understand how matter is not only able to emerge but also develop into something essentially higher. One theologian whose theology developed within an evolutionary perspective was Karl Rahner, a prominent German Catholic Jesuit theologian (1904–1984). Rahner weaved evolutionary biology into his theology as a way to relate theology with the discoveries of science. In his work, Rahner explained how matter continues to develop even after the universe emerged. The development of matter in a state of ‘becoming’ is possible because of ‘active self-transcendence’.

¹ Peter M. J. Hess and Paul L. Allen, *Catholicism and Science* (Westport, CT: Greenwood Press, 2008), 8.

² Ibid., 9-11.

³ For example, we see this effort from the Center for Theology and the Natural Sciences (CTNS), which is a graduate program of the Graduate Theological Union (GTU) in Berkeley, California. See <http://www.ctns.org>. The Catholic Church also engages theology and science, such as its work in the Vatican Observatory. See <http://www.vaticanobservatory.va/content/spicolavaticana/en.html>.

In this thesis, I will argue that the current scientific perspective of ‘emergence’ can give a more robust understanding to Rahner’s notion of active self-transcendence.⁴ I will demonstrate this by showing that Rahner’s concept of active self-transcendence is congruent to that of the of emergence. For example, both positions agree in the unity of all things and that there is a hierarchical level of complexity in the universe. In this respect, the scientific perspective of emergence strengthens and broadens Rahner’s argument. Among the strengths of emergence, is that this framework can integrate patterns across levels of emergence and across a variety of scientific theories.

This thesis will make its argument in three chapters. The first chapter will begin by exploring the main themes of Rahner’s thought to better appreciate the context in which Rahner paints the development of matter to spirit before expounding on the notion of active self-transcendence. The goal of the first chapter will be to explain that active self-transcendence speaks of ‘matter’ in a process of ‘becoming’ (and becoming something more), leaping to something essentially higher, and that this process of ‘becoming’ is made possible through the dynamism of the absolute being. By integrating the perspective of evolutionary biology, Rahner gives us a notion which paints a trajectory of development from the beginning of creation to the emergence of life.

Emergence cannot be defined in simple terms. The second chapter will develop its argument in three parts: A, B, and C. Part A will begin by showing that emergence is often

⁴ The notion of active self-transcendence can be found in many of Karl Rahner’s writings. They include the following: Karl Rahner, “Christology Within an Evolutionary View of the World,” in *Theological Investigations*, vol. 5, *Later Writings*, trans. by Karl-H. Kruger (London: Darton, Longman and Todd, 1966); “Christology in the Setting of Modern Man’s Understanding of Himself and of His World,” in *Theological Investigations*, vol. 11, *Confrontations*, trans. by David Bourke (London: Darton, Longman and Todd, 1974); and *Foundations of Christian Faith: An Introduction to the Idea of Christianity* (New York: Crossroad, 1984), 176-311.

identified with the concept of ‘complexity’. Next, the perspective of emergence rose within the context of reductionism and understanding it will help shed a greater understanding on emergence. I will also discuss concepts such as epistemological (weak) and ontological (strong) emergence, including their meanings and characteristics. They are important to the discussion of this thesis. Part B will discuss how the perspective of emergence can show the development of human beings to something essentially higher from an evolutionary perspective. Using the characteristics of emergence, I will demonstrate how we can speak of the human person possessing a sense of openness today. Finally, in part C, I shall offer a working definition to the scientific perspective of emergence, including some clarifications.

The last chapter of this thesis will synthesize Rahner’s core ideas about the notion of active self-transcendence with the concepts, meanings, and characteristics of emergence as was described in the second chapter. The goal is to show how the concepts, meanings, and characteristics of emergence can strengthen Rahner’s argument on how matter can actively self-transcend to something essentially higher. Finally, I will also consider how the discussion in this thesis can be relevant for the understanding of Christian faith today and our place in the world. By the end of this thesis, I hope to have sufficiently demonstrated how the scientific perspective of emergence adds robustness to Rahner’s notion of active self-transcendence, thereby making a positive contribution to the current efforts of elucidating the relationship between theology and science.

This thesis also falls within a wider context, which is on the relationship between theology and science. As such, some consideration of the relationship between the two discipline before we delve into the thesis might be helpful.

1. Faith Intelligible with the Realities of Life

Recently, a friend shared that a priest spoke about the soul. According to this priest, the soul remains on earth for forty days before ascending to heaven. When I inquired further, I learned that a lecturer had taught this at the seminary. I also remember a bishop who stated very confidently that evil spirits reside in temples, and this belief is also held by many Catholics in Asia.

The example above is among the reasons why it is important to stress the relationship between theology and science. A simple fact is that science is important to life today. The practical application of science has shaped human life in ways that are profound, from mobile devices to medical advances. The discoveries of science make the universe comprehensible to us. Most of us do not think of science as a kind of religion; instead, it is a way for us to understand the nature of things through empirical means. Scientists develop theories to interpret the discoveries of science. For example, the discovery of radioactive waves as cosmic background noise is one of the data that enabled scientists to construct the Big Bang model, which tells us how the universe began. Scientific discoveries contribute to our progress as a species and to our species' understanding of itself.

In their book *The Grand Design*, scientists Stephen Hawking and Leonard Mlodinow point out that people in the past turned to God because they did not know better. They assert that that is not the case today because science has made God irrelevant. They state that “ignorance of nature’s ways led people in ancient times to invent gods to lord over every aspect of human life.”⁵ This view echoes what Ian Barbour claims about certain

⁵ Stephen Hawking and Leonard Mlodinow, *The Grand Design* (New York: Bantam Books, 2012), 25.

perspectives on religious beliefs. Barbour points out that people often have contrasting views of science and religion. Science is viewed as “objective, universal, rational, and based on solid observational evidence,” while religion “seems to be subjective, parochial, emotional, and based on traditions or authorities that disagree with each other.”⁶ Barbour also described four ways that science can relate to religion. They are Conflict, Independence, Dialogue, and Integration.⁷

One can hardly blame the bleak view that many people, such as Hawking and Mlodinow, have about religion. Religion is slow to enter into dialogue or seek some form of integration with other viewpoints. When it comes to religion, many seem to be in a place of conflict and independence. Our practice of religion can and must be better. Or else, Barbour’s bleak description of Christianity may prove to be correct.

Working towards establishing a relationship between theology and science is a first step. Science is essential to our faith because the absence of a correct scientific perspective can leave a gap in our theology. This gap can result in a faith that is at risk of becoming parochial and out of touch with reality, or it can even give rise to superstition as we saw in the example at the beginning of this section.

There has also been an ongoing discussion on the relationship between theology and science in the Catholic Church. Pope Francis himself integrated science into his

⁶ Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues*, rev. ed (San Francisco: HarperSanFrancisco, 1997), 77. Barbour explains why this view is not valid in his book, but I will not delve into it in this thesis but just state that such a view of religion still exists today.

⁷ Ibid.

encyclical *Laudato Si'*. In it, he speaks of “complex systems” and “biological evolution.”⁸ Francis’s encyclical shows that science can ground the way in which we can understand ourselves and our place in the universe. Science can also give us a more “concrete language for our deepest insights about God’s relation to creation.”⁹

St. Anselm tells us that theology is faith seeking understanding. Theology is a way for us to elaborate and make clear the contents of our faith. It makes sense, then, why Francis Schüssler Fiorenza writes that “theology is a fragile discipline,” which is “more a hope than a science.”¹⁰ Theology “is more like a raft bobbing on the waves of the sea than a pyramid built on solid ground.”¹¹ From my perspective, establishing a relationship between theology and science makes theology less like a raft bobbing on the waves of the sea. This relationship will allow one to speak of a divine action in a way that is grounded and real. Thomas Tracy tells us that “any divine action that affects historical events, therefore must take the form of an intervention that disrupts the intelligible structures of the world around us and threatens the coherence and integrity of our lives.”¹²

Having considered how science can enrich our own understanding of faith, this thesis now will delve into the work of Rahner, whose theology is also enriched by the discoveries of science.

⁸ Francis, *Laudato Si': On the Care for Our Common Home*, May 24, 2015, Chapter 1, #18, accessed September 9, 2016, http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html.

⁹ Robert John Russell, *Cosmology, from Alpha to Omega: The Creative Mutual Interaction of Theology and Science* (Minneapolis: Fortress Press, 2008), 52.

¹⁰ Francis Schüssler Fiorenza and John P. Galvin, *Systematic Theology: Roman Catholic Perspectives*, 2nd ed. (Minneapolis, MN: Fortress Press, 2011), 3.

¹¹ Ibid.

¹² Thomas F. Tracy, ed., *The God Who Acts: Philosophical and Theological Explorations*, (University Park: Pennsylvania State University Press, 1994), 78.

Chapter 1

The Notion of Active Self-Transcendence

In this chapter, I will outline Rahner's notion of active self-transcendence. The heart of Rahner's argument is that matter increases in complexity through a process of becoming, leaping to something essentially higher. This is made possible by the dynamic creative power of the absolute being, which is immanently present in creation. Before delving into Rahner's notion of active self-transcendence, this thesis will consider Rahner's own disposition with science. Then, this thesis will discuss some of his pertinent theological themes. It is important to understand Rahner's anthropology because he speaks of the human person transcending into the mystery of God, which is made possible through active self-transcendence. The notion of active self-transcendence exposes Rahner's efforts in integrating an evolutionary perspective into an overarching metaphysics that describes how God acts in creation. The goal of this chapter will be to grasp the notion of active self-transcendence.

1. Karl Rahner and Science

Rahner understood the need for the relationship between theology and science. He belonged to the Catholic Görresgesellschaft for the Advancement of Science, which was established in 1957, five years before the opening of the Second Vatican Council. Rahner also took "an active part in the annual conferences (often in Feldafing in Bavaria), and there presented his view on questions of hominization, genetic engineering, and so on;

these were also published later.”¹³ Rahner saw science as a way to understand “how God’s creative presence is working itself out in history.”¹⁴ He was described as a “pastoral theologian of the Church, very conscious of the particular context of German Catholicism in the early twentieth century.”¹⁵ He was said to see “himself as a theologian of a Church trying to locate itself and find a voice in the new world, especially a new Germany.”¹⁶

In “Christology within an Evolutionary View of the World,” Rahner writes that it is inevitable that a believer will wonder whether the understanding of “evolution of the world can be justified before the Christian faith.”¹⁷ In addition, Rahner thinks that a believer is bound to ask a second legitimate question about whether “his faith is compatible and at least sufficiently reconcilable with the lifestyle and the horizons of understanding which he shares with his age and with his contemporaries.”¹⁸ For Rahner, the human person is something special, and thus he sees that “the persistent problem theology has with evolutionary thinking is that the latter seems to diminish human uniqueness, resulting in the view that the human being is simply a highly complex animal.”¹⁹

¹³ Herbert Vorgrimler, *Understanding Karl Rahner: An Introduction to His Life and Thought* (New York: Crossroad, 1986), 73.

¹⁴ Michael Barnes, “Demythologization in the Theology of Karl Rahner,” *Theological Studies* 55, no. 1 (1994): 28.

¹⁵ George E. Griener, “Karl Rahner: Pastoral Theologian,” in *Finding God in All Things: Celebrating Bernard Lonergan, John Courtney Murray, and Karl Rahner*, ed. Mark Bosco and David Stagaman (New York: Fordham University Press, 2007), 151.

¹⁶ *Ibid.*, 151.

¹⁷ Rahner, *Foundations of Christian Faith*, 178.

¹⁸ *Ibid.*

¹⁹ Gregory Brett, *The Theological Notion of the Human Person: A Conversation Between the Theology of Karl Rahner and the Philosophy of John Macmurray* (New York: Peter Lang, 2013), 263.

In *Foundations of Christian Faith*, Rahner states that he wants to “give people confidence for the very *content* of Christian dogma itself that they can believe with intellectual honesty.”²⁰ Intellectual honesty “does not compel one to believe, but it does make it justifiable for one to do so.”²¹ To be intellectually honest is to accept that one’s faith is, “humanly speaking, always open and provisional, and capable of further development.”²² It is in this sense that “faith itself...actively explores its own content...[and] activates the critical and speculative faculties of the believer, causing him to put the vital question of what his conscience demands of him in terms of truthfulness to himself.”²³ Quoting 1 Peter 3:15, Rahner tells us that we “want to reflect here upon this fact of our Christian existence, and we want to justify it before the demands of conscience and of truth by giving an ‘account of our hope.’”²⁴

There are two ways to describe Rahner’s work on the relationship between science and theology. First, he is “forging links of meaning,” as described by Philip Hefner, who explains, “If we engage science from a stance within religious experience, we will seek above all to forge links of meaning between the world that science describes and that which is most important to us.” Hefner also states that “forging links that relate our lives to the world around us is equivalent to establishing meaningfulness between ourselves and the

²⁰ Rahner, *Foundations of Christian Faith*, 12.

²¹ Karl Rahner, “Intellectual Honesty and the Christian Faith,” in *Theological Investigations*, vol. 7, *Further Theology of Spiritual Life 1*, trans. David Bourke (London: Darton, Longman and Todd, 1971), 71.

²² *Ibid.*, 57.

²³ *Ibid.*, 58.

²⁴ Rahner, *Foundations of Christian Faith*, 2.

world.”²⁵ Hefner tell us how meaning is established when speaking about forging meaning and the process of discernment. He says that “meaning is established, for example, if a person can take into account one or more natural processes – say, the evolution of life on planet Earth or big bang cosmology – and come to the conclusion either that those processes are supportive of her or his deepest values or that they are hostile to those values.”²⁶ The similarity in position is on the “methodological point of departure” when engaging questions of evolution and theology, where Rahner states that “we are going to try to forge a link between theology and the basic concepts of an evolutionary ‘world view,’ as daring as this may sound.”²⁷

The second description relates to Rahner’s view of intellectual honesty and truthfulness. Michael Welker sees that the people who engage in discourses on science and theology can be seen as “truth-seeking communities,” and in this way, they fight against “bad reductionism.”²⁸ Truth-seeking communities are groups of courageous people “who indeed raise truth claims, but above all develop and practice open and public forms and procedures in which these truth claims are subjected to critical and self-critical examination.”²⁹

²⁵ Philip Hefner, “Religion and Science,” in *The Oxford Handbook of Religion and Science*, ed. Philip Clayton and Zachary R. Simpson (Oxford, NY: Oxford University Press, 2006), 563.

²⁶ Ibid.

²⁷ Karl Rahner, “Natural Science and Reasonable Faith,” in *Theological Investigations*, vol. 21, *Science and Christian Faith*, trans. Hugh M. Riley (London: Darton, Longman and Todd, 1988), 34.

²⁸ Michael Welker, “Science and Theology: Their Relation at the Beginning of the Third Millennium,” in *The Oxford Handbook of Religion and Science*, ed. Philip Clayton and Zachary R. Simpson (Oxford, NY: Oxford University Press, 2006), 551-561.

²⁹ Ibid., 557.

Herbert Vorgrimler states that in his dialogue with natural scientists, Rahner learned “from them to think in a rationally limited way in evolutionary terms.”³⁰

Vorgrimler goes on to say,

He learned to understand the history of God with the world and humanity as an evolutionary process which moves forward in qualitative ‘leaps’: from the inorganic to life, from the vegetative to consciousness, from the animal kingdom to the human world, from parents to the child, from humanity to God in man, in Jesus of Nazareth, from death to consummation. He termed these ‘leaps’ or transitions self-transcendence, and in so doing preserved the honour of humanity, including the honour of natural sciences, and the honour of God: God alone can enable the finite to bring forth something really new.³¹

2. Transcendence and the Self-Communication of God

The human person is wrapped in the absolutely incomprehensible mystery whom we call God. Harvey D. Egan writes that “theology, for Rahner, must always be *salvific*, that is, focused on God’s forgiving, healing, and transforming love as revealed in the long history of salvation which reached its high point in the life, death, and resurrection of Jesus Christ.”³² Hence, Rahner views Christianity as simply “nothing more than the genuine explication and true interpretation of what resides in the ultimate depth of the human person.”³³ In essence, “because Christianity is the best interpretation of what and who we are, Rahner grounded his theology in God’s unending self-revelation in human *experience* manifested in the life, death, and resurrection of Jesus Christ.”³⁴ Thus, for Rahner, the

³⁰ Vorgrimler, *Understanding Karl Rahner*, 111.

³¹ *Ibid.*, 112.

³² Harvey D. Egan, “Theology and Spirituality,” in *The Cambridge Companion to Karl Rahner*, ed. Declan Marmion and Mary E. Hines (2005; repr., New York: Cambridge University Press, 2007), 14.

³³ *Ibid.*

³⁴ *Ibid.*

ground of the finiteness that human beings experience is the very ground by which they transcend. Karen Kilby writes that when reading Rahner, “one is sure to come across the term transcendental, and in many disguises.”³⁵ She states that “Rahner is described as a transcendental Thomist and as a proponent of transcendental theology.”³⁶ Rahner speaks of “transcendental experience, transcendental revelation, human transcendence or transcendentalism, of transcendental investigations, and of transcendental anthropology.”³⁷ In Rahner’s thought, “to transcend means to surpass, to go beyond or above, and one might expect ‘transcendental’ to have something to do with that which goes beyond or rises above something.”³⁸

Rahner’s starting point is to see the human person as a question: “We must reflect *first of all* upon man as the universal question which he is for himself.”³⁹ When the human person faces themselves as a question, then that “creates the condition of really hearing, and the only answer brings the question to its reflective self-presence.”⁴⁰ In *Spirit in the World*, Rahner writes, “Man questions. This is something final and irreducible... Man questions necessarily... this necessity can only be grounded in the fact that being is accessible to man at all only as something questionable [*Fragbarkeit*], that he himself is insofar as *he asks about being*, that he himself exists as a question about being.”⁴¹

³⁵ Karen Kilby, *Karl Rahner: Theology and Philosophy* (New York: Routledge, 2004), 32.

³⁶ Ibid.

³⁷ Ibid.

³⁸ Ibid.

³⁹ Rahner, *Foundations of Christian Faith*, 11.

⁴⁰ Ibid.

⁴¹ Karl Rahner, *Spirit in the World*, trans. William Dych (New York: Continuum, 1994), 57.

For the human person, to question is as essential as breathing. However, questioning does not bring the person outside of himself or herself but, rather, within. Rahner writes, “The question about being as a transcendental question consciously turns upon itself, looks and questions itself, it reveals itself as a *knowledge* of man about his questioning essence: he is already with being in its totality (*beim Sein im ganzen*): otherwise, how could he ask about it?”⁴² Gregory Brett points out that the human person is able to recognize a broader context within which the question has been asked and is open to “more” reality.⁴³ It is in the “act of knowing any particular thing, the human being is already ‘beyond’ this immediate object and has an awareness of the whole range of possible objects, or being as such.”⁴⁴ Rahner writes,

In his first question (which always takes place with the question of being as its ground) he is already *quodammodo omnia* (in a certain way everything), and still he is not yet that, he is still nothing, ‘*tabula rasa, materia prima in ordine intellectus*’ (a clean slate, prime matter in order of intellect), for precisely what he does is *ask* what he means when he asks about being in its totality.⁴⁵

A person, “insofar as he experiences himself as conditioned and limited by sense experience, and all too much conditioned and limited, he has already transcended this sense experience.”⁴⁶ The transcendence of the human person is “always orientated towards the holy mystery.”⁴⁷ It is by this that the questioning human person experiences his or her finiteness and “reaches beyond this finiteness and experiences himself a transcendent

⁴² Rahner, *Spirit in the World*, 60

⁴³ Brett, *Theological Notion Human Person*, 52.

⁴⁴ Ibid.

⁴⁵ Rahner, *Spirit in the World*, 60

⁴⁶ Rahner, *Foundations of Christian Faith*, 20.

⁴⁷ Ibid., 21.

being, as spirit,” as a “being with an *infinite* horizon.”⁴⁸ Rahner writes that “the infinite horizon of human questioning is experienced as a horizon which recedes further and further the more answers man can discover.”⁴⁹ This transcendental experience, the being “whom we call ‘God’ encounters man in silence, encounters him as the absolute and the incomprehensible.”⁵⁰ Egan explains that it is the call of mystery that “explains why our questions never cease, why we eventually must ask ultimate questions, and why we are never satisfied totally with anything in this life.”⁵¹ For Rahner, mystery is “the horizon which cannot be mastered and which masters all of our understanding, and which allows the other to be understood by being present to itself in its silence and in its incomprehensibility.”⁵² This relates to Rahner’s view on the transcendental nature of human beings, which is very much at the heart of his theology. Rahner states, “Man [as a being is] mystery in his essence, his nature... beings who are referred to the incomprehensible God. But this reference, which is our nature, can only be conceived and understood when we allow ourselves freely to be grasped by the incomprehensible.”⁵³ Thus, Rahner believes that “our whole existence is the acceptance or rejection of the mystery which we are, as we find our poverty referred to the mystery of the fullness.”⁵⁴ In this respect, mystery is not something to be discovered so that it ceases to be a mystery.

⁴⁸ Rahner, *Foundations of Christian Faith*, 32.

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ Egan, “Theology and Spirituality,” 19.

⁵² Rahner, *Foundations of Christian Faith*, 217.

⁵³ Karl Rahner, “On the Theology of the Incarnation.” in *Theological Investigations*, vol. 4, *More Recent Writings*, trans. Kevin Smyth (London: Darton, Longman, 1966), 108.

⁵⁴ Ibid., 109.

Instead, “mystery is our nature, because the transcendence which we are and which we accomplish brings our existence and God’s existence together: and both as mystery.”⁵⁵

A significant point for Rahner in his anthropology is his use of the transcendental pre-apprehension (*Vorgriff*) of being. On this, Rahner states that “man is a transcendent being insofar as all of his knowledge and all of his conscious activity is grounded in a pre-apprehension of ‘being’ as such, in an unthematic but ever-present knowledge of the infinity of reality.”⁵⁶ Kilby explains the concept of *Vorgriff* by explaining the sources from which Rahner drew:

To characterize the *Vorgriff*, and its relation to our knowledge or choice of particulars, Rahner relies on a number of images. One is taken from Heidegger: we are aware of infinite being as the *horizon* for our knowledge of finite things. An awareness of being and of God, to put it another way, forms the ever-present and necessary background for our knowledge of the particular objects that lie in the foreground of consciousness. A second image is borrowed from (though not original to) Aquinas: the *Vorgriff* is the *light* which in illuminating the individual objects allows our intellect to grasp them. A third image, that of movement, Rahner owes chiefly to Maréchal: we have a dynamism towards being and God, so that the mind always moves beyond any particular, never entirely satisfied or at rest.⁵⁷

The expression ‘mind always moves beyond any particular’ can be understood in the sense that we transcend ourselves even in our thinking. This speaks to Rahner’s point about the human person as a transcendent being. Kilby notes, “Rahner is always careful to insist, not to confuse the kind of awareness we have of being and of God with our knowledge of finite objects.”⁵⁸ At least the first two of the three images that characterize

⁵⁵ Rahner, “Theology of the Incarnation.” 109.

⁵⁶ Rahner, *Foundations of Christian Faith*, 33.

⁵⁷ Kilby, *Karl Rahner*, 20.

⁵⁸ *Ibid.*

Rahner's use of *Vorgriff* can help us make the distinction between the two kinds of knowing.

Rahner says that in order “to determine the breadth of the horizon” that we want to pre-apprehend, the question to ask is this: “Is this horizon that of the imagination of infinite space and time, or is it broader, in principle unlimited in every dimension, the horizon of being absolutely, which discloses itself as transcending space and time?”⁵⁹ The nature of this pre-apprehension is not in the “object of human knowledge,” because it would mean that our pre-apprehension would be “conditioned by another pre-apprehension.”⁶⁰ Rahner tells us that “this ‘wither’ (*Worauf*) of the pre-apprehension as such is not a humanly conceivable object.”⁶¹ Pre-apprehension is a way that we understand human knowledge but “pre-apprehension goes beyond what is ‘grasped.’”⁶² Pre-apprehension is, then, not just about what can be grasped or about the attainment of human knowledge, but rather it is the act of pre-apprehending itself that moves us “towards the totality of the object.”⁶³

Another aspect that is important to consider before delving into Rahner's evolutionary view is his understanding of the self-communication of God. God's self-communication is not merely God speaking in a language that the human person can understand. In God's self-communication, what is “communicated is really God in his own being, and in this way it is a communication for the sake of knowing and possessing God

⁵⁹ Rahner, *Spirit in the World*, 143.

⁶⁰ Ibid.

⁶¹ Ibid.

⁶² Ibid., 143-144.

⁶³ Ibid., 145.

in immediate vision and love.”⁶⁴ In other words, “the giver is the gift given.”⁶⁵ Rahner writes that God’s self-communication “has ‘divinizing’ effects in the finite existent in whom this self-communication takes place.”⁶⁶ Stephen J. Duffy further explains that, for Rahner, grace “is first and foremost God in self-communication.”⁶⁷ Grace is something accessible to everyone, and it is the heart of one’s existence. Grace is not elusive as grace is present in one’s relationship with God. If grace is the self-communication of God, then this self-communication is addressed to all creation. In his *Theological Investigations* essay “Theology and Anthropology,” Rahner explains grace from a transcendental anthropological framework:

Grace is God himself in self-communication, grace is not a ‘thing’ but – as communicated grace – a conditioning of the spiritual and intellectual subject as such to a direct relationship with God... it can only be understood from the point of view of the subject, with his transcendental nature, experienced as a being-in-reference-to the reality of absolute truth and free-ranging, infinite, absolutely valid love. It can only be understood in one’s innermost regions as an immediacy before the absolute mystery of God, i.e. as the absolute realization of man’s transcendental nature itself, made possible by God in his self-communication.⁶⁸

Duffy writes that “grace is neither detraction from, nor alien addition to, the authentically human, but fulfillment of the openness to the mystery energizing the heart’s drive to self-realization. Grace is ground, polestar, and goal of the human journey.”⁶⁹ Therefore, all truly human activity is a free, positive or negative, response to God’s offer

⁶⁴ Rahner, *Foundations of Christian Faith*, 118.

⁶⁵ Stephen J. Duffy, “Experience of Grace,” in Marmion and Hines, 44.

⁶⁶ Rahner, *Foundations of Christian Faith*, 120.

⁶⁷ Duffy, “Experience of Grace,” 44.

⁶⁸ Karl Rahner, “Theology and Anthropology,” in *Theological Investigations*, vol. 9, *Writings of 1965-67 I*, trans. Graham Harrison (London: Darton, Longman and Todd, 1972), 36-37.

⁶⁹ Duffy, “Experience of Grace,” 45.

of self—the grace at the heart of human existence. Because God offers nothing less than God’s very own self to everyone, the human person is, to Rahner’s way of thinking, *homo mysticus*, mystical person.⁷⁰

3. An Evolutionary View

At the beginning of the long chapter on Jesus Christ in *Foundations*, Rahner states that we have now arrived at what is “decisively Christian in Christianity.”⁷¹ William Dych highlights the fact that Rahner’s evolutionary theory is within the context of asking, “how can the classical ‘descending’ Christology of God becoming incarnate in the world and in humanity be supplemented by an ‘ascending’ Christology which begins with the world and humanity, and sees them as moving towards this point of unity with God?”⁷² He traces three main steps on how Rahner shows this affinity and thereby an “ascending Christology of the world’s movement towards unity with God.”⁷³

First, there is the intrinsic unity of matter and spirit in the sense of the evolutionary movement of the material world towards spiritual existence. Secondly, there is the intrinsic unity between human spiritual existence and the life of grace freely bestowed by God. Thirdly, there is the intrinsic unity between the union of human beings with God in grace and the hypostatic union of the man Jesus with God.⁷⁴

Dych observes that “in Rahner’s cosmic vision the being of the whole created universe moves towards its fulfillment in human being, and human being moves towards its

⁷⁰ Harvey D. Egan, “The Mystical Theology of Karl Rahner,” *The Way* 52, no. 2 (April 2013): 43.

⁷¹ Rahner, *Foundations of Christian Faith*, 176.

⁷² William Dych, *Karl Rahner* (London: Geoffrey Chapman, 1992), 69.

⁷³ *Ibid.*

⁷⁴ *Ibid.*, 69-70.

fulfillment in Jesus Christ.”⁷⁵ Thus, Rahner’s cosmology, anthropology, and Christology are “intrinsically related moments within this single vision.”⁷⁶

The intrinsic unity of spirit and matter is an important point for Rahner. This also clarifies that his thoughts on spirit and matter are far from a Cartesian body-soul dualism. Cartesian dualism was a result of René Descartes grappling with “the thinking activity of the knower” yet being embodied in the material world.⁷⁷ This required some disengagement on the part of the thinking knower from the usual bodily perspective. Descartes, who was mostly a physicalist, believed that “all basic bodily functions were aspects of a physical ‘machine,’ and that the functioning of animals did not transcend these mechanisms.”⁷⁸ Believing the body to be a physical machine and unable to imagine “how rationality could be manifest by a machine,” Descartes sharpened the distinction between body and soul.⁷⁹ Brett notes that Rahner “sets out to avoid the anthropological dualism present in the traditional distinction between body and soul.”⁸⁰

4. Active Self-Transcendence

The key phrases relevant to the notion of active self-transcendence, which Rahner uses in *Foundations*, are “becoming” (as in “becoming something more”), “surpassing of

⁷⁵ Dych, *Karl Rahner*, 70.

⁷⁶ Ibid.

⁷⁷ Charles Taylor, *Sources of the Self: The Making of the Modern Identity* (Cambridge, MA: Harvard University Press, 1989), 145. For more, read the Cartesian Mind-Body/ Body-Soul treatment, which Taylor presents in 143-158.

⁷⁸ Warren S. Brown, “The Emergence of Human Distinctiveness,” in *The Depth of the Human Person: A Multidisciplinary Approach*, ed. Michael Welker (Grand Rapids, MI: William B. Eerdmans, 2014), 110.

⁷⁹ Ibid., 122.

⁸⁰ Brett, *Notion of Human Person*, 263.

self,” “intrinsic increase of its own being,” and “emptiness actively achieving its own fullness.”⁸¹ The power of the absolute fullness of being is so *intrinsic* to the finite existent that this finite existent is empowered to achieve a real and *active* self-transcendence.⁸² Thus, the notion of self-transcendence “includes transcendence into something substantially new, a leap to something *essentially* higher.”⁸³ Rahner tells us that ‘matter’ in creation has evolved towards ‘spirit’ in a process of active self-transcendence made possible by the power of the absolute being. In this respect, the process of active self-transcendence is related to the emergence of matter in creation, and from matter, life emerges.

The notion of active self-transcendence expresses Rahner’s own concern as to how one can understand the salvific destiny of the human person. However, active self-transcendence is broader and more inclusive than just the human person, for the notion includes the emergence of everything, including the entire evolutionary process. It is key that one sees active self-transcendence as the development of matter in the direction of the spirit under the dynamism of the absolute being.⁸⁴ This development from within towards what is essentially higher, conceived as a being’s “self-transcendence,” can be thought of as “evolution.”⁸⁵

⁸¹ Rahner, *Foundations of Christian Faith*, 184. These concepts are similar to his essay, “Christology Within Evolutionary View,” 165-166.

⁸² *Ibid.*, 185.

⁸³ *Ibid.*

⁸⁴ Karl Rahner, *Theological Investigations*, vol. 6, *The Unity of Spirit and Matter in the Christian Understanding of Faith*, trans. Karl-Heinz Weger, 153-177 (London: Darton, Longman and Todd, 1969), 178.

⁸⁵ Karl Rahner, “Evolution,” in *Sacramentum Mundi*, ed. Karl Rahner (Herder & Herder: New York, 1968), 290.

The concept of active self-transcendence is also important to the way human persons can understand themselves today. Rahner tells us that “an essential trait in modern man’s understanding of himself and of his world is the conviction that the world is not a static reality, but rather a world in process of becoming, subject to the process of evolution and history.”⁸⁶ In his own modest way, Rahner integrated the evolutionary understanding of science to present a trajectory of how one can perceive the development of the universe since the beginning of time. This evolutionary perspective is the notion of active self-transcendence. The key concepts remain the same throughout his writings. In this respect, Rahner’s thought in the notion of active self-transcendence has been rather consistent in his writings.⁸⁷

We must recognize the possibility of a genuine development from below into something higher, denying neither that this ‘something higher’ is genuinely new in time, nor that it has connections with what already exists in time. And if we do this then in the very nature of the case we cannot escape from the concept of becoming as a genuine process of self-transcendence. All creaturely being is being in process of becoming, but all becoming, if it is really worthy of the name, is the becoming of that which is qualitatively higher, and which, nevertheless, is the act of that which is lower. And it is precisely this that is signified when we speak of self-transcendence. That which is higher is not merely added on to the lower stages in the world’s development, but is actually enacted and attained to through these lower stages in a process of genuine self-transcendence. What was formerly signified by the terms ‘conservatio’ and ‘concursus’ in Christian theology is nothing else than the dynamic impulse towards precisely this self-transcendence present in all being in virtue of the immanence of God.⁸⁸

In summary, active self-transcendence can be understood as follows: (1) there is a genuine development from something lower to higher, and all creaturely being is in the process of

⁸⁶ Rahner, “Christology in the Setting,” 221.

⁸⁷ Besides the notion of active self-transcendent being present in many of his *TI* writings, the core ideas are also present in his earlier work *Hominisation*. Rahner conveys this idea much more clearly in his later writings “Christology in the Setting” and in *Foundations of Christian Faith*.

⁸⁸ Rahner, “Christology in the Setting,” 224-225.

becoming; (2) true becoming must be conceived as “becoming more,” a real surpassing of self or a leap to a higher nature; and (3) becoming takes place by the dynamism of the power of the absolute being.⁸⁹ Points (1) and (2) will be important to our discussion on emergence later. Point (3) is the place where this thesis will contribute to the discussion of emergence, although, admittedly, the scientific community will not consider the dynamism of the power of the absolute being as the cause and reason for matter actively self-transcending.

What does it mean to say that the process of becoming takes place through the dynamism of the power of the absolute being? First, it speaks to the ‘immanence’ of God. God has always been immanently present within creation. This immanent presence of God is understood as a “fundamental relationship, which God bears on the world.”⁹⁰ This relationship is not “merely that of the Creator in the creature” but rather the “indwelling of God in the spiritual creature through grace.”⁹¹ Rahner states that the “immanence of God in the world must be conceived of as of so radical a kind that the process of self-transcendence inherent in being in process of becoming genuinely is and remains an active process of self-transcendence.”⁹² Rahner holds that the “transcendence of God must be maintained... by reason of God’s sovereign independence of the world... [to] ensure that what emerges from this process of becoming is that which is genuinely new.”⁹³ For Rahner,

⁸⁹ Points derived from *TI* essays “Christology in the Setting” and “Christology Within Evolutionary View.”

⁹⁰ Denis Edwards, *How God Acts: Creation, Redemption, and Special Divine Action* (Minneapolis, MN: Fortress Press, 2010), 39.

⁹¹ *Ibid.*

⁹² Rahner, “Christology in the Setting,” 225.

⁹³ *Ibid.*

that which is “new” represents a mode of being that was not previously there before, though he states that “even the very highest, although it is essentially new, can be understood as a variation of what existed previously.”⁹⁴ The notion of active self-transcendence shows that “the state of becoming genuinely inherent in the world of itself postulates the fact that God is simultaneously immanent and transcendent in it in a single act.”⁹⁵

By showing that the self-transcendence of creation “takes place within the dynamism of the power of absolute being,” Rahner takes pains to note that God does not intervene with the processes of the universe and the world.⁹⁶ This issue is also pertinent to the current discussion about God’s non-divine intervention in the world.⁹⁷ The framework of active self-transcendence is Rahner’s way of seeing “God’s operation as an enduring, active support of cosmic reality... elaborated in such a way that this divine operation itself is envisaged as actively enabling finite beings themselves by their own activity to transcend themselves.”⁹⁸

Rahner states that the process of active self-transcendence is what Christians understand by ‘preservation’ and ‘cooperation’ of the universe. This refers to the Christian

⁹⁴ Rahner, *Foundations of Christian Faith*, 187.

⁹⁵ Rahner, “Christology in the Setting,” 225.

⁹⁶ Ibid.

⁹⁷ There is a great deal of dialogue about speaking of a non-interventionist perspective of divine action. For example, Robert John Russell presents the framework of NIODA, an acronym for “non-interventionist objective divine action.” Russell, *Cosmology, from Alpha to Omega: The Creative Mutual Interaction of Theology and Science*, Theology and the Sciences. (Minneapolis, MN: Fortress Press, 2008), 110-143. In his book *The God Who Acts*, Thomas Tracy states, “Any divine action that affects historical events, therefore must take the form of an intervention that disrupts the intelligible structures of the world around us and threatens the coherence and integrity of our lives.” Thomas F. Tracy, *The God Who Acts: Philosophical and Theological Explorations* (University Park, PA: Pennsylvania State University Press), 78.

⁹⁸ Karl Rahner, *Hominisation: The Evolutionary Origin of Man as a Theological Problem*, trans. W.T. O’Hara (Freiburg: Herder and Herder, 1965), 68-69.

perspective of the doctrine of creation. The question is how God continues to act in the universe after the act of creation. The Vatican Council I document *Dei Filius* states, “By his providence God protects and governs all things, which he has made, ‘reaching mightily from one end of the earth to the other, and ordering all things well’. For ‘all are open and laid bare to his eyes’, even those things which are yet to come into existence through the free action of creatures.”⁹⁹ *Dei Filius* presents a classical perspective that God created the universe out of nothing (*creatio ex nihilo*) and continues to hold it in being (*creatio continua*). Church Father Athanasius taught that God made *creatio ex nihilo* and that “the presence of the Word in nature is necessary, not only for its original Creation, but also for its permanence, or else, everything that ‘is’, should be broken up again into nothingness.”¹⁰⁰ The perspective of God’s *conservatio* (preservation) and *concursus* (cooperation) in Christianity can also be found in the *Catechism of the Catholic Church* (CCC), which tells us, “With creation, God does not abandon his creatures to themselves. He not only gives them being and existence, but also, and at every moment, upholds and sustains them in being, enables them to act and brings them to their final end.”¹⁰¹ The CCC also states that “God is the sovereign master of his plan. But to carry it out he also makes use of his creatures’ cooperation.”¹⁰² Rahner’s notion of active self-transcendence tells us how this can be, which is through the creative dynamism of the power of God that is intrinsic in all creation.

⁹⁹ Vatican Council I, *Dei Filius* I.

¹⁰⁰ *Contra Gentes*, 41.

¹⁰¹ *Catechism of the Catholic Church*, no. 301.

¹⁰² *Ibid.*, 306.

Rahner also speak repeatedly about spirit and matter in his notion of active self-transcendence. Thus, it is important to understand what he means by “spirit” and “matter.” Throughout his writings, Rahner emphasizes the intrinsic unity of spirit and matter. In “Christology in the Setting of Modern Man’s Understanding of Himself and of His World,” Rahner writes that “the Christian professes in his Faith that all things – heaven and earth, the material and the spiritual world – are the creation of one and the same God” and that the variety and differences in creation can “be seen to form a unity in origin, self-realization and determination, in short: one world.”¹⁰³ In another place, Rahner writes, “Spirit and matter have necessarily an intrinsic connection with one another, because both of them derive from the one infinite Spirit which is God as their Creator.”¹⁰⁴ Thus, we cannot think of spirit and matter as existing alongside each other. Rahner points out that, firstly, the unity of spirit and matter is seen most clearly in the human person.¹⁰⁵ Secondly, the history of the development of spirit and matter “can be thought of as an ‘evolution,’ i.e., as development from within towards what is essentially higher, provided ‘becoming’ (in the full sense of the word) is conceived as a being’s ‘self-transcendence.’”¹⁰⁶

Since according to Christian philosophy and theology every created being, because finite, is in a state of becoming and changing and is part of the unity of the world which is directed towards a single goal of full accomplishment, the concept of evolution can be employed to describe, in a general and comprehensive way, what characterizes all the reality, distinct from God, which lies within the horizon of our experience.¹⁰⁷

¹⁰³ Rahner, “Christology Within Evolutionary View,” 162.

¹⁰⁴ Rahner, “Christology in the Setting,” 219.

¹⁰⁵ Rahner, “Christology Within Evolutionary View,” 162.

¹⁰⁶ Rahner, “Evolution,” in *Sacramentum Mundi*, 290.

¹⁰⁷ *Ibid.*, 289.

In Rahner's framework, creation is the "self-bestowal of God" who "communicates his own reality to the other."¹⁰⁸ Thus, "creation can and should be conceived of as an element in, and prior setting for, the self-bestowal of God, that act in which he does not create something different from himself and set it over against himself, but rather communicates his own reality to the other."¹⁰⁹ Denis Edwards explains Rahner's thought in stating, "God chooses to give God's self in love to what is not divine, and so creation comes to be."¹¹⁰ It is in this sense that we can speak of God as being always immanently present within creation. It is through this foundation of God's creative self-bestowal that the world emerges, enveloped in the history of God, while achieving "an ever-higher degree of self-transcendence."¹¹¹

It is the spirit that makes sense of matter. Much of the science begins and ends with the study of matter. Rahner's work seems to indicate very strongly that matter expresses the spirit. He writes, "What is material, therefore, is for a Christian, theistic philosophy only conceivable at all precisely as a factor in relation to spirit and for the sake of (finite) spirit."¹¹² An important point on this is Rahner's use of the term *gefrorener*, which is German for 'frozen' to describe matter. Rahner refers to Thomistic philosophy that regarded matter or what is material as a kind of "limited" or "solidified" spirit.¹¹³ Patrick

¹⁰⁸ Rahner, "Christology in the Setting," 226.

¹⁰⁹ Ibid.

¹¹⁰ Edwards, *How God Acts*, 39.

¹¹¹ Ibid.

¹¹² Rahner, *Hominisation*, 55.

¹¹³ Ibid. In some places, the word "limited" or "solidified" is translated as "frozen," but Rahner's *Theological Investigations* essay uses the word "frozen," *Unity of Spirit and Matter*, 186, 170, and 177. They all convey the same idea of what matter is in relation to Spirit.

Burke explains that Rahner's "notion of matter as 'frozen spirit' and an evolutionary worldview can be reconciled only on the double precondition that matter exists only for and in view of spirit and that God, as the ground of all inner-worldly becoming, is immanent within the process precisely by being transcendent over it."¹¹⁴

Matter is "*materia prima*" (prime matter) that has a negative character where "in itself and of itself connoting no real act and no positive reality, [and] is precisely the same being and perfection which, independently of such limitation and apart from it, connotes spirit, immanence and cognition."¹¹⁵ Rahner also mentions the intrinsic negativity of matter, by which he means that matter by itself cannot transcend or rise above itself.¹¹⁶ For Rahner, "spirit, at least finite spirit, can never be thought of in such a way that in order to attain perfection it must move away from material reality, or that its perfection increases in proportion to its distance from matter."¹¹⁷ Rather, "spirit must be thought of as seeking and finding itself through the perfection of what is material."¹¹⁸ Rahner's thoughts on matter appear to be more developed and clearer in *Theological Investigations* than in *Hominisation*, where he states that "matter is, therefore, the openness and the bringing-itself-to-appear of the personal spirit in the finite world and hence is from its very origin

¹¹⁴ Patrick Burke, *Reinterpreting Rahner: A Critical Study of His Major Themes* (New York: Fordham University Press, 2002), 257.

¹¹⁵ Rahner, *Hominisation*, 56.

¹¹⁶ *Ibid.*, 57.

¹¹⁷ *Ibid.*, 59.

¹¹⁸ *Ibid.*

related to the spirit, is a moment in the spirit, and indeed a moment of the eternal Logos as he freely but in fact exists, and this for all eternity.”¹¹⁹

Earlier, Rahner said that the development of matter into something that is higher than itself is what Christian metaphysics and theology call God’s immediate *conservatio* (preservation) and *concursus* (cooperation).¹²⁰ Rahner understands creation to be the self-bestowal of God and that God is the transcendent ground of everything. God is “present as the ground, implicitly and simultaneously affirmed, of every reality met with and affirmed, and as being, which is the ground of what is, but always present as mediated by finite things.”¹²¹ It is along these lines that Rahner saw that it is only by the divine operation of God, which is an enduring, active support of cosmic reality, that enables finite beings to transcend themselves.¹²²

Edwards states that the core idea of Rahner’s notion of self-transcendence is in God’s immanent presence, which enables and empowers evolutionary emergence.¹²³ The “fundamental effect of God’s immanent presence” is that “creation has the capacity for self-transcendence.”¹²⁴ Rahner’s “two concepts of divine self-bestowal and creaturely self-transcendence are interrelated: it is God’s self-bestowal that enables and empowers creaturely self-transcendence.”¹²⁵ Rahner “considers the transitions to the new in the history

¹¹⁹ Rahner, *Unity Spirit and Matter*, 171.

¹²⁰ Rahner, *Hominisation*, 65.

¹²¹ Ibid.

¹²² Ibid., 69.

¹²³ Edwards, *How God Acts*, 43-45.

¹²⁴ Ibid., 43.

¹²⁵ Ibid.

of the universe, particularly when matter becomes life, and when life becomes self-conscious spirit.”¹²⁶ In Rahner’s concept of active self-transcendence, “there is an evolutionary dynamism that is truly intrinsic to creation but occurs through the creative power of the immanent God.”¹²⁷ According to Edwards, “the idea of self-transcendence indicates that at the empirical level of science, the emergence of the new is completely open to explanation.”¹²⁸ In a nutshell, “the material universe transcends itself in the emergence of life, and life transcends itself in the human. In human beings, the universe becomes open to self-consciousness and freedom, and to a fully personal response to God’s self-bestowal in grace.”¹²⁹

5. The End-Goal of Active Self-Transcendence

Having presented the notion of active self-transcendence, Rahner speaks of the finality of the history of nature and spirit. He states,

If man is thus the self-transcendence of living matter, then the history of nature and of spirit form an intrinsic and stratified unity in which the history of nature develops towards man, continues on in him as *his* history, is preserved and surpasses in him, and therefore reaches its own goal with and in the history of man’s spirit.¹³⁰

Rahner has painted a trajectory where “the whole movement of creation reaches its goal in the free and self-conscious human person,” and in a certain sense, “the human person sums up creation.”¹³¹ Through the evolutionary process, the “history of nature

¹²⁶ Edwards, *How God Acts*, 43.

¹²⁷ Ibid.

¹²⁸ Ibid.

¹²⁹ Ibid., 44.

¹³⁰ Rahner, *Foundations of Christian Faith*, 187.

¹³¹ Roman A. Siebenrock, “Christology,” in Marmion and Hines, 119.

reaches its goal” in the human person, and now humanity must “continue its history.”¹³² The human person, who is the product of creation, has achieved “self-presence in the cosmos,” and “this self-presence of the cosmos in the spirit of individual persons has a history which is still going on,” both individually and collectively.¹³³ When we consider the trajectory painted by Rahner by which the “cosmos becomes conscious of itself in man, in his individuality and in the freedom he actualizes, [then] this process must also have a final result.”¹³⁴ Christian terminology usually expresses it as “man’s final and definitive state, his salvation, the immortality of the soul or the resurrection of the flesh,” all of which describes something of the “final and definitive state of fulfillment for the cosmos.”¹³⁵ Rahner also further elaborates on how we can understand the Christian teachings on grace and glory. The “immediate self-communication of God to spiritual creature takes place in what we call ‘grace’ while this self-communication is still in its historical process, and ‘glory’ when it reaches fulfillment.”¹³⁶ We can see now why Rahner considers the evolutionary process as a history of matter towards spirit. This spirit is the self-presence of creation in the cosmos, whose goal is the infinite and the ineffable mystery of God. He writes,

The mystery which we call God gives himself in his divine existence, gives himself to us for our own in a genuine act of self-bestowal. He himself is the grace of our existence. We shall say, therefore, that what we mean by the creation is that the divine being freely ‘exteriorises’ his own activity so as to produce non-divine being, but does this solely in order to produce the necessary prior conditions for his own divine self-bestowal in that free and unmerited love that is identical with himself;

¹³² Rahner, *Foundations of Christian Faith*, 187.

¹³³ Ibid., 190.

¹³⁴ Ibid.

¹³⁵ Ibid.

¹³⁶ Ibid.

that he does this in order to raise up beings who can stand in a personal relationship to himself and so receive his message, and on whom he can bestow not only finite and created being distinct from himself, but himself as well. In this way he himself becomes both giver and gift, and even more the actual source of man's own capacity to receive him as gift. Thus the finite, of its very nature as finite, finds its ultimate fulfillment in God as the mysterious infinite.¹³⁷

6. A Synthesis of Rahner's Notion

Rahner's thoughts on active self-transcendence are consistent in many of his writings although his expression varies. My thoughts are that it would be helpful to synthesize Rahner's notion from his various writings. My working definition of active self-transcendence is as follows: *Active self-transcendence can be described as matter developing in a process of becoming whereby the higher levels are orientated in terms of an ever-increasing complexity with and through the lower levels of matter, giving rise to something substantially new, a leap into something essentially higher. This is made possible through the creative power of the absolute fullness of being that is so intrinsic to the finite existent that this finite existent is empowered to achieve a real and active self-transcendence.*

There are two points within Rahner's notion which I will emphasize. First, Rahner uses the term 'higher' and 'lower' order to characterize a process of active self-transcendence. He writes, "The higher order always embraces the lower as contained in it, it is clear that the lower always precedes the actual event of self-transcendence and prepares the way for it by the development of its own reality and order."¹³⁸ He further argues that the lower not only prepares and that "which is higher is not merely added on to the lower

¹³⁷ Rahner, "Intellectual Honesty Christian Faith," 63-64.

¹³⁸ Rahner, "Christology Within Evolutionary View," 168. Rahner's thoughts here appear to be similar to his later writings in *Foundations of Christian Faith*, 186.

stages in the world's development, but is actually enacted and attained through these lower stages in a process of genuine self-transcendence."¹³⁹ The higher (levels) develop in complexity with and through the lower (levels).

Second, Rahner's use of active self-transcendence states that "the development of biologically organized materiality is orientated in terms of an ever-increasing complexity."¹⁴⁰ In his essay "Christology Within an Evolutionary View of the World," Rahner speaks of "transcendence into what is substantially new, i.e. the leap to a higher nature."¹⁴¹ Rahner's thoughts appear to be similar and yet more inclusive by the time he wrote *Foundations of Christian Faith*, stating it as "transcendence into something substantially new, a leap to something *essentially* higher."¹⁴² I prefer the latter as I agree with Rahner that the development of matter within the process of active self-transcendence meant not only a growing complexity of matter into something substantially new but that it is a leap to something *essentially* higher. The notion of active self-transcendence is thus broadened and is inclusive of all creation.

Rahner relates the concepts he used for active self-transcendence with evolution.¹⁴³ Given what we know from the recent discoveries of science, emergence seems to be most apt as the concept itself applies to the whole of creation and that ever since matter emerged

¹³⁹ Rahner, "Christology Within Evolutionary View," 225.

¹⁴⁰ Rahner, "Christology in the Setting," 219. We see Rahner also using the phrase "growing complexity" in another place. Rahner, "Evolution," 291.

¹⁴¹ Rahner, "Christology Within Evolutionary View," 166.

¹⁴² Rahner, *Foundations of Christian Faith*, 185.

¹⁴³ See Rahner, "Evolution," 289-294.

at the beginning of the universe, it entered into a process of becoming, increasing in complexity from something lower to something essentially higher.

7. Conclusion

We have seen the main ideas of active self-transcendence and how it integrates an evolutionary view of the world. Rahner explained that everything was possible because of the dynamic creative presence of the absolute being we call God. One can get a feel of the characteristics that are important in Rahner's notion of active self-transcendence. For example, there is unity in all things, there is a sense of a trajectory, there is a becoming in matter where there is an increase of complexity, there is newness of something that had not previously existed, and there is a description of the higher and lower.

The next chapter will present the scientific perspective of emergence, which resonates closely with the concepts, meanings, and characteristics of active self-transcendence but is somewhat broader since it encompasses the scientific perspective.

Chapter two will begin by discussing the views of scientists and theologians on the scientific perspective of emergence. Then, the chapter will dwell more deeply into core concepts, meanings, and characteristics of emergence. Finally, it will speak of the emergence of the conscious human person within an evolutionary perspective. Perhaps this accomplishes to a certain extent what Rahner sought to achieve:

Naturally, it would in itself be desirable to show more concretely what common traits are to be found in the evolution of material, living and spiritual beings – to show (more exactly) how the merely material is a prelude in its own dimensions to the higher dimension of life, and how the latter in its dimension is a prelude to the spirit in its ever greater advance towards the border line to be crossed by self-transcendence.¹⁴⁴

¹⁴⁴ Rahner, "Christology Within Evolutionary View," 168.

Chapter 2

The Scientific Perspective of Emergence

The goal of this chapter is to clarify and define the scientific perspective of emergence. This chapter will accomplish this in three parts: A, B, and C.

The first part of this chapter will examine the concepts of emergence from theologians and scientists. For example, the work of theologians Philip Clayton and Niels Henrik Gregersen and of biologist Ursula Goodenough and neuroanthropologist Terrence Deacon are helpful in this regard. Clayton and Gregersen offer helpful concepts about how we can understand the scientific perspective of emergence. Meanwhile, Goodenough and Deacon offer a much more comprehensive and definite scientific theory of how things can emerge in the universe.

The second part of this chapter will draw on the perspective of emergence to demonstrate that emergence can show us how the human person can emerge as a species possessing consciousness and a wide sense of horizon. This section will begin by exploring the work of psychologist, neuroanthropologist, and cognitive neuroscientist Merlin Donald. The heart of Donald's argument is that the human brain evolved with culture, resulting in the emergence of human persons with "hybrid-minds." Culture results in the symbolic capacity of the human person, and with it, the externalization of memory. Donald's argument shows that being able to store our memories in culture expands our operational mental architecture vastly. Another person that can relate and expand Donald's theory is cognitive scientist Joaquín M. Fuster. Fuster presents a unique feature of the human person which has emerged through evolution. Fuster calls this "memory of the future." The human brain is highly adaptive and interacts continuously with its

environment. It maintains a continuous perception/action cycle that can integrate the past with the future. Fuster will show a convergence of the perceptual ability of the brain in the present, and this convergence enables the brain to make decisions into the future. Drawing patterns across scientific theories can give us better insight to the emergence of the human person possessing consciousness with a sense of self.

In the final part of this chapter, I will offer a working definition of emergence and discuss the limitations of the argument. Using the scientific perspective of emergence, I will explain how it can give robustness to Rahner's notion of active self-transcendence in the third chapter.

Part A

1. Emergence and Complexity

The universe is an open question. It is a mystery. History shows us that the questions 'why' and 'how' occupied the minds of philosophers through the ages. Today, science asks these same questions and offers theories that help us to better understand the universe in which we live. It is a misconception that science presents us with theories that are based on observable facts alone. Theologian and physicist Ian Barbour argues that theories of science "involve novel concepts and hypotheses not found in data, and they often refer to entities and relationships that are not directly observable."¹⁴⁵ Theories of science may influence the observation of data, and the "form of questions we asked

¹⁴⁵ Barbour, *Religion and Science*, 106.

determines the kind of answer we receive.”¹⁴⁶ Barbour references the work of physicist and historian Thomas Kuhn, who argued that “scientific data are strongly dependent on dominant *paradigms*.”¹⁴⁷ A paradigm is “a cluster of conceptual and methodological presuppositions embodied in an exemplary body of scientific work.”¹⁴⁸ Creativity coupled with imagination may cause a scientific paradigm shift and, thus, affect our view and understanding of the world, such as the “Newtonian mechanics in the eighteenth century or relativity and quantum physics in the twentieth century.”¹⁴⁹ On this point, Barbour states that “science does not lead to certainty. Its conclusions are always incomplete, tentative, and subject to revision.”¹⁵⁰ Furthermore, “theories change in time, and we should expect current theories to be modified or overthrown, as previous ones have been.”¹⁵¹ In the history of science, there has been “a sequence of better and better theories or models, from Plato to the classical theory of Newton to modern quantum theories.”¹⁵² However, Barbour points out that “science does offer reliable procedures for testing and evaluating theories by a complex set of criteria.”¹⁵³

The scientific perspective of emergence is similar in this respect. It is a perspective by which one can view and understand the universe in which one lives. Philosopher and

¹⁴⁶ Barbour, *Religion and Science*, 108.

¹⁴⁷ Ibid.

¹⁴⁸ Ibid.

¹⁴⁹ Ibid.

¹⁵⁰ Ibid., 110

¹⁵¹ Ibid.

¹⁵² Hawking and Mlodinow, *The Grand Design*, 7.

¹⁵³ Barbour, *Religion and Science*, 110.

theologian Philip Clayton states that “*emergence* is the philosophical position – more accurately, the philosophical elaboration of a series of scientific results – that best expresses the philosophical import of evolutionary theory.”¹⁵⁴ It is the “naturalist position most strongly supported by a synthetic scientific perspective – that is, by the study of natural history across the various levels it has produced – as well as by philosophical reflection.”¹⁵⁵

The common use of the term emergence “refers to processes of coming forth from latency, or to states of things arising unexpectedly.”¹⁵⁶ It is generally recognized that the term ‘emergence’ was first used as a philosophical concept by English Philosopher George Henry Lewes in his 1875 *Problems of Life and Mind*. The term was popularized when it was embraced by the British school of philosophy (usually referred to as British emergentists) in the 1920s, in particular Samuel Alexander, C. Lloyd Morgan, and C.D. Broad.¹⁵⁷ The emergence theory “was formed as a meta-scientific interpretation of evolution in all its forms: cosmic, biological, mental, and cultural.”¹⁵⁸

Gregersen tells us that there are three generally accepted views on which emergentists can agree, even if “they differ in metaphysical orientation.”¹⁵⁹ First, emergents are *qualitative novelties*, for example, “weight is a “resulting property of aggregating

¹⁵⁴ Philip Clayton, *Mind and Emergence: From Quantum to Consciousness* (New York: Oxford University Press, 2004), 2.

¹⁵⁵ Ibid.

¹⁵⁶ Niels Henrik Gregersen, “Emergence and Complexity,” in *The Oxford Handbook of Religion and Science* (Oxford, NY: Oxford University Press, 2006), 767.

¹⁵⁷ Paul Davies, preface to *The Re-Emergence of Emergence*, ed. Philip Clayton and Paul Sheldon Davies (Oxford: Oxford University Press, 2006), x. Gregersen, “Emergence and Complexity,” 767.

¹⁵⁸ Gregersen, “Emergence and Complexity,” 767.

¹⁵⁹ Ibid.

matter, whereas the liquidity and surface tension of water are new, emergent qualities in relation to the chemical compounds of hydrogen and oxygen.”¹⁶⁰ Next, nature is a *nested hierarchy of ontological levels*, meaning that “the higher emergent levels (e.g., living organisms) include the lower levels (e.g., inorganic chemistry), on which they are based.” Finally, emergents are *explanatory holists*, which is to say that the “higher levels are not predictable from our knowledge of their constituent parts, and their operations are often in principle irreducible to the lower levels.”¹⁶¹ This also means that bottom-up “microphysical causation must be supplemented by various forms of top-down causation in order to account for the properties and functions of the higher levels.”¹⁶² From the three views, this chapter will consider the *nested hierarchy of ontological levels* and *explanatory holists*, which fall under the ontological argument of emergence.

Deacon puts forth a supportive view, stating that emergence is a term “most often used by scientists to describe the spontaneous appearance of unprecedented orderliness in nature.”¹⁶³ He argues that the term has been around for a century and was relevant in so far as it could be used to explain the “unprecedented nature of life and of mind with respect to the other physical processes.”¹⁶⁴ The term emergence today “connotes the image of something coming out of hiding, coming into view for the first time – something without

¹⁶⁰ Gregersen, “Emergence and Complexity,” 767.

¹⁶¹ Ibid.

¹⁶² Ibid.

¹⁶³ Terrence Deacon, “Emergence: The Hole at the Wheel’s Hub,” in *The Re-Emergence of Emergence*, ed. Philip Clayton and Paul Sheldon Davies (Oxford: Oxford University Press, 2006), 121.

¹⁶⁴ Ibid.

precedent and perhaps a bit surprising.”¹⁶⁵ Thus, “emergence used in this context is intended to convey the something-from-nothing impression that is produced when unprecedented properties are produced spontaneously without the intervention of external modification of a system.”¹⁶⁶ Deacon posits that most uses of the “emergence concept implicitly assume an effect that is manifested at ascending levels of scale. Natural phenomena that are described as emergent tend to be mostly compositional in some sense.”¹⁶⁷ Deacon also states that scale is important in the discussion of emergence because “an increased number of components increases iterative interaction possibilities.”¹⁶⁸ He adds, “With every iterated interaction, relational properties are multiplied with respect to each other, so an increase in numbers of elements and chances increases the relative importance of interaction parameters and related contextual variables.”¹⁶⁹ ‘Iterative’ essentially means ‘repetition’ or ‘frequency’. This also presents us with a way to understand the term ‘complexity’ as it is most often used in emergence. Deacon states that a more extensive definition of emergence might be something like an “*unprecedented global regularity generated within a composite system by virtue of the higher-order consequences of the interactions of composite parts.*”¹⁷⁰

Although Clayton argues on a similar point on the iterative model of emergence, he expresses reservations on the preciseness of Deacon’s theory, especially on his three

¹⁶⁵ Deacon, “Emergence,” in Clayton and Davis, 121.

¹⁶⁶ Ibid.

¹⁶⁷ Ibid.

¹⁶⁸ Ibid.

¹⁶⁹ Ibid., 121-122.

¹⁷⁰ Ibid., 122.

steps of emergent complexity as detailed in Deacon's paper on "The Hierarchic Logic of Emergence."¹⁷¹ Clayton was critical of Deacon's claim that in the iterative process, "stage three emergence does not become a new starting point for a further process of emergent complexity leading to new emergent wholes" and that "the system has achieved all the ontological complexity there is to achieve."¹⁷² Clayton's critique makes sense if Deacon's statement means that a process of 'development' or 'becoming' stops in a system. Deacon's argument indicates that there comes a point in time when there can be no further increase in matter that can give rise to novel emergents that are unpredictable, surprising, and irreducible.

However, Clayton agrees with Deacon that increasing complexity within a system "under certain conditions gives rise to emergent entities or units and they in turn becomes more complex" until they produce further units that are "basic causal agents in their own right, and the process begins again."¹⁷³ Clayton also noted that for this iterative model to be correct, it would mean that "no single scientific discipline can express the precise nature of emergence; *emergence is a pattern that runs on a variety of different platforms*."¹⁷⁴

Clayton makes a valid point. First, the idea of complexity is central to the discussion of emergence, supporting the scientific claims of the hierarchical levels in the processes of nature. The iterative model provides a framework to understanding what complexity

¹⁷¹ See Terrence Deacon, "The Hierarchic Logic of Emergence: Untangling the Interdependence or Evolution and Self-Organization," in *Evolution and Learning: The Baldwin Effect Reconsidered*, ed. John Heil and Alfred Mele (Oxford: Oxford University Press, 1993), 73. Deacon speaks of thermodynamics, morphodynamics, and teleodynamics as the process that leads to the emergence of life from matter.

¹⁷² Clayton, *Mind and Emergence*, 46.

¹⁷³ Ibid.

¹⁷⁴ Ibid.

entails. Second, the emergence perspective offers a means to discern and integrate scientific discoveries toward a wider understanding of ourselves and this universe we call home.

Gregersen points out that “‘emergence’ and ‘complexity’ often travel together.”¹⁷⁵ However, he also points out that not all “emergents arise from complexity, for quite a few emergent phenomena, such as consciousness, take place by leaving out information, or by ex-formation or de-complexification of neural firings.”¹⁷⁶ He states that the “sensation of something like ‘scarlet red’ is much simpler than an accurate description of the environmental, sensory, and neural processes involved in the production of that particular qualia.”¹⁷⁷ That means that there can be a “series of arrows leading from complexity to emergence to simplicity.”¹⁷⁸ There can also be “cases that the arrow goes the other way round, as when a fascination with scarlet red and other colours leads someone to become a painter and thereby participate in the wider cultural circulation of paintings, schools of painters, galleries, art buyers, and newspaper reviews.”¹⁷⁹ Gregersen notes that in this case, the “arrow goes from low-degree complexity to emergence to high-degree complexity.”¹⁸⁰

There are levels of complexity ranging from the complexation of molecular interactions resulting in water or ice to complexity in evolution, spanning across time. This thesis takes the point of view that complexity must be considered both from a wider

¹⁷⁵ Gregersen, “Emergence and Complexity,” 768.

¹⁷⁶ Ibid., 772.

¹⁷⁷ Ibid., 772-773.

¹⁷⁸ Ibid., 773.

¹⁷⁹ Ibid.

¹⁸⁰ Ibid.

perspective and through the lens of time. The process involved when life emerges from a single cell continues in an upward trajectory, with an increase in complexity until plant and animal life emerges. Thus, the wider perspective is to recognize that matter does increase in complexity, and this complexity results in novel emergent properties such as the mind and consciousness.

Physicist Paul Davies, who points out that it is not a simple matter to distinguish precisely between random and organized complexity, also affirms my point above about complexity, which must be considered from the perspective of time. For example, “we can see a box of gas molecules rushing around at random and the elaborately organized activity of a bacterium.”¹⁸¹ One clear fact is that “organized complexity of the sort exemplified by life... [has] been forged over deep time, through elaborate processing of matter and energy and the operation of ratchets to lock in the products of this processing.”¹⁸²

Emergence is a scientific perspective that depends on the research and discoveries of scientists to understand the processes of the universe wherein complexity increases over ‘deep time’, resulting in the emergence of something higher from something lower. It is because there is a recognition of the lower and higher that we can speak of a hierarchy of levels. The irreducibility of nature is the other aspect of which we will speak in the next section.

Gregersen points out that the theory of emergence developed during the period of the Darwinian revolution of science was flatlined during the reductionist climate in the

¹⁸¹ Paul Davies, “Introduction: Towards an Emergentist Worldview,” in *From Complexity to Life: On the Emergence of Life and Meaning*, ed. Niels Hendrik Gregersen (New York: Oxford University Press, 2003), 7.

¹⁸² Ibid.

philosophy of science between the 1930s and 1960s, revived again in the 1970s thanks to computer studies of complexity, and has since been supported by anti-reductionist trends within the philosophy of science.¹⁸³ Thus, it is helpful to explore one context in which the theory of emergence has been used, namely, against the reductionist perspective.

2. The ‘Whole’ is more than the ‘Parts’: The Problem of Reductionism

Harold Morowitz writes that Pope John Paul II once asked scientist and psychologist John Holland the following question: “How are we to reconcile the explanation of the world... with the recognition that the whole is more than the sum of its parts?”¹⁸⁴ The pope was looking at a perspective beyond the reductionist perspective, which states that the parts explain the whole. One way to grasp the meaning of emergence is to study the context of its usage, thereby addressing the reductionism perspective.

Barbour speaks of a form of epistemology called scientific materialism, which asserts that matter is the fundamental reality in the universe and the scientific method is the only reliable path to knowledge.¹⁸⁵ According to Barbour, “many forms of materialism express reductionism,” which is to say that “the laws and theories of all the sciences are in principle reducible to the laws of physics and chemistry.”¹⁸⁶ More importantly, scientists and those who accept this view claim that “the component parts of any system determine

¹⁸³ Gregersen, “Emergence and Complexity,” 768.

¹⁸⁴ Harold J. Morowitz, *The Emergence of Everything: How the World Became Complex* (New York: Oxford University Press, 2002), 23. Morowitz writes that this was in 1992, when the Pope was giving the allocation to the plenary session of the Pontifical Academy of Science on “The Emergence of Complexity in Mathematics, Physics, Chemistry, and Biology.”

¹⁸⁵ Ian G. Barbour, *When Religion Meets Science* (New York: HarperOne, 2000), 11.

¹⁸⁶ Ibid.

its behavior.”¹⁸⁷ For example, Francis Crick, co-discoverer of DNA (deoxyribonucleic acid), opens his book *The Astonishing Hypothesis* with the following statement: “The Astonishing Hypothesis is that ‘you,’ your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules.... ‘You’re nothing but a pack of neurons.’”¹⁸⁸ Davies states, “The philosophy that the whole is nothing but the sum of its parts is known as reductionism, and it has exercised a powerful grip on scientific thinking.”¹⁸⁹ He says that if the world is already explained at the level of subatomic physics, then the notion of complexity loses most of its significance since the lower levels explain everything.¹⁹⁰ This claim will even challenge what it means to be alive because “no atom in the human body is living, and human bodies are nothing but a combination of atoms.”¹⁹¹

Clayton states that the “discussion of emergence has grown out of the successes and the failures of the scientific quest for reduction.”¹⁹² The re-emergence of the “emergence theories presuppose that the once-popular project of complete explanatory reduction – that is, explaining all phenomena in the natural world in terms of the objects and laws of physics – is finally impossible.”¹⁹³ The limitations of the philosophical position

¹⁸⁷ Barbour, *When Religion Meets Science*, 11.

¹⁸⁸ Francis Crick, *The Astonishing Hypothesis: The Scientific Search for the Soul* (New York: Scribner, 1994), 3.

¹⁸⁹ Davies, “Towards an Emergentist Worldview,” 4.

¹⁹⁰ Ibid.

¹⁹¹ Ibid.

¹⁹² Philip Clayton, “Conceptual Foundations of Emergence Theory,” in Clayton and Davies, 1.

¹⁹³ Ibid.

of reductionism does not mean that science will stop trying to explain “phenomena in terms of their constituent parts and underlying laws.”¹⁹⁴ Taking either the reductionistic perspective or the perspective of emergence presupposes an understanding of natural science with its goals, epistemic status, and relations to other areas of study, and this will affect how scientists choose to pursue their discoveries and view their results.¹⁹⁵

Emergence moves in the opposite direction, which is “from the wholes to the parts.”¹⁹⁶ That the ‘whole’ is more than its ‘parts’ is an important aspect of how we can see and understand the universe. For example, the human person cannot be understood merely by the activities of the brain. As theology tends to look at the bigger picture, emergence has also “become a central and almost necessary category for many theologians engaged with the sciences.”¹⁹⁷ For example, the perspective of emergence can add to the richness of how we can see and understand ourselves and the universe we live in. It enables physicist and theologian John Polkinghorn to claim that “many dimensions of the rich reality of creation intersect in the human person.”¹⁹⁸ The reductionist approach can contribute greatly to the understanding of the human person. For example, the reductionists approach gave us the DNA, but it does not tell the whole story and “any adequate anthropology will have to do justice to these multiple dimensions of humanity.”¹⁹⁹ Theologian Gregory Peterson writes that the “theories of emergence provide a framework that makes scientific and

¹⁹⁴ Clayton, “Conceptual Foundations Emergence Theory,” 1.

¹⁹⁵ Ibid.

¹⁹⁶ Morowitz, *The Emergence of Everything*, 14.

¹⁹⁷ Gregory R. Peterson, “Species of Emergence,” *Zygon*, vol. 41, no. 3 (September 2006): 689.

¹⁹⁸ John C. Polkinghorn, “Towards an Integrated Anthropology,” in Welker, 79.

¹⁹⁹ Ibid.

theological claims compatible, even to the point of allowing the two to be yoked together into a single synthesis.”²⁰⁰ A reductionist stance can result in “a worldview that ultimately denies the reality of higher-order pattern of entity, including the mind and ethical values.”²⁰¹

Goodenough and Deacon’s essay “The Sacred Emergence of Nature” tells us that emergence puts back together broken fragments that were taken apart by the reductionist approach.²⁰² While acknowledging how “reductionism has yielded splendid results in science, there is an important sense in which it is artificial, and in this sense false.”²⁰³ For example, by starting “from wholes and moving ‘down’ into parts, one is moving in the opposite direction from the way matters arise.”²⁰⁴ For emergentists, “to grasp how matters arise, one must run the muscle movie backwards, from the subatom to the atom to the amino acid to the protein to the polymer to the cell to the muscle to the contraction.”²⁰⁵ According to them, it is important to begin the movie with “reductionist understandings [because] otherwise, there is no way to know what to put in the movie.”²⁰⁶ Thus, “once it is understood how proteins fold and myosin hydrolyses ATP and so on, [then] it is possible

²⁰⁰ Peterson, "Species of Emergence," 689.

²⁰¹ Ibid.

²⁰² Ursula Goodenough and Terrence W. Deacon, “The Sacred Emergence of Nature,” in *The Oxford Handbook of Religion and Science*, 854. To be specific, the example is on the broken egg fragments of Humpty Dumpty.

²⁰³ Ibid.

²⁰⁴ Ibid.

²⁰⁵ Ibid.

²⁰⁶ Ibid.

to narrate such understandings in the correct temporal and spatial sequence, moving ‘upwards’ from one level to the next.”²⁰⁷

Goodenough and Deacon state that scientists who engage in such ‘upward’ projects “quickly arrive at an understanding that has in fact been around for some time.”²⁰⁸ They present two phrases that are important to how we can understand and describe emergence. First, they say that “the whole is greater than the sum of its parts.”²⁰⁹ Second, they claim that “as one moves ‘up’ in levels of scale, one encounters ‘something more from nothing but’ or, less euphoniously but more accurately, ‘something else from nothing but.’”²¹⁰ They note that “the point is not that one encounters something greater or something more, but that one encounters something else altogether.”²¹¹ According to them, “this something else can, in turn, participate in generating a new something else at a different level of organization. That is, today’s something else may be tomorrow’s nothing but,” and “the now widely adopted term to describe such dynamics is *emergence*.”²¹²

On the concept of emergence itself, Goodenough and Deacon writes, “Emergence not only surrounds us in the non-living world; it is also the key dynamic of living organisms, as in, for example, the emergence of contractility (something else) from the interaction of myosin and actin polymers (nothing but).”²¹³ They state that “life has a

²⁰⁷ Goodenough and Deacon, “Sacred Emergence of Nature,” 854.

²⁰⁸ Ibid.

²⁰⁹ Ibid.

²¹⁰ Ibid.

²¹¹ Ibid.

²¹² Ibid.

²¹³ Ibid.

number of additional features, however, and these are perhaps best appreciated by considering ways that life may have emerged from non-life.”²¹⁴ Goodenough and Deacon also state that “all origin-of-life hypotheses are by definition speculative, since the default assumption is that the original lifeform is no longer extant but went on to evolve into the DNA-based, lipid-membrane-enclosed, protein-mediated, single-celled organisms that served as the common ancestors of all modern lifeform.”²¹⁵

While the concept of emergence makes a good case against reductionism in many important ways, the concept itself is more significant than that. Deacon particularly makes this point. The use of emergence as merely anti-reductionist will result in the use of emergence to fill in the gaps where “standard reductionistic accounts seem to be incomplete in explaining apparent discontinuities.”²¹⁶ He states that this negative use of emergence “serves only as a philosophically motivated promissory note for a missing explanation that, critics argue, is needed to fill in a gap.”²¹⁷

The core arguments here are that the whole is more than the parts and that the whole is not reducible to the parts. The reductionist perspective is important for understanding the parts, but the perspective of emergence can help us see the bigger picture, such as recognizing that we are more than our cells. Also, the term emergence can connote ‘encounter’. For example, one encounters something new, and this something new can, in turn, participate in generating a new something else at a different level of organization.

²¹⁴ Goodenough and Deacon, “Sacred Emergence of Nature,” 854.

²¹⁵ Ibid.

²¹⁶ Deacon, “Emergence,” 123.

²¹⁷ Ibid.

3. Concepts of Emergence

Gregersen has told us earlier that “in ordinary language ‘emergence’ refers to processes of coming forth from latency, or to a state of things arising unexpectedly.”²¹⁸ In his paper, he presents “a short philosophical primer consisting of four types of emergence theory, two epistemological and two ontological.”²¹⁹ There are questions associated with the emergent phenomena, such as “what is actually emerging?”²²⁰ Does what actually emerges have “only *properties*, with no causal roles, or is it properties that involve new *causal capacities*, some of which may even be formulated in the form of *emergent laws*?” Also, can we “legitimately speak of new *emergent individuals*?”²²¹ According to Gregersen, these questions “are linked to the fundamental distinction between ‘weak’ and ‘strong’ claims of emergence.”²²²

Given the broadness of the concepts of emergence, Table 1 below presents an overview of the argument outlined in the following pages. Table 1 spells out the claims of what emergence, its meanings, and characteristics. It will also show how part B, which is on the evolutionary development of the human person, fits into the argument of this thesis. Hopefully, this will be helpful as we delve deeper into the topic. In chapter three, I will demonstrate how the characteristics of emergence discussed in this chapter can enrich the notion of active self-transcendence.

²¹⁸ Gregersen, “Emergence and Complexity,” 767.

²¹⁹ Ibid., 769.

²²⁰ Ibid., 775.

²²¹ Ibid.

²²² Ibid.

Table 1: A brief outline on the discussion on emergence in this chapter.

Part A	
<p>3. Concepts of Emergence</p> <p><i>What is actually emerging? The questions are related to the distinctions between weak and strong claims of emergence below. (49)</i></p> <p><u>3.1. Epistemological (Weak) Emergence and Ontological (Strong) Emergence</u></p> <p><u>Epistemological (Weak) Emergence</u> (51) (The first concept has two parts)</p> <p><i>Emergence¹</i> is a purely logical or computational form of emergence. (52)</p> <p><i>Emergence²</i> “refers to cases where new physical properties appear but are fully dependent on their subvenient physical bases.(52)</p> <p><u>Ontological (Strong) Emergence</u> (51) (The second concept also has two parts)</p> <p><i>Emergence³</i> “refers to cases where new emergent properties, based on new spatial or hierarchical configurations, acquire new causal capacities in the context of relatively enduring higher-order systems.”(52)</p> <p><i>Emergence⁴</i> refers to special cases when new emergent properties are based on new spatial or hierarchical configurations and “give rise to new causal capacities in the context of relatively enduring higher-order systems exhibiting not only self-referential but also self-reflective and unified features such as human consciousness.(54)</p>	<p>Meanings and Characteristics</p> <p><u>3.2 Five Different Meanings of Emergence (52)</u></p> <p>E₁ (Emergence meaning one) refers to <i>theories of emergence within specific scientific fields. (53)</i></p> <p>E₂ refers to the <i>levels of emergence within the natural world. (55)</i></p> <p>E₃ refers to <i>patterns across scientific theories. (55-56)</i></p> <p>E₄ refers to a <i>theory about patterns in the transitions between sciences. (56)</i></p> <p>E₅ refers to <i>the metaphysics of emergence. (56-57)</i></p> <p><u>3.3 Characteristics of Emergence (55)</u></p> <p>(3.3.1) monism (57-58)</p> <p>(3.3.2) hierarchical complexity (58-59)</p> <p>(3.3.3) no monolithic law of emergence (59-61)</p> <p>(3.3.4) patterns across levels of emergence (61-62)</p> <p>(3.3.5) downward causation (62)</p>
<p>Part B</p> <p>An Evolutionary Perspective of the Human Person</p> <p>The scientific perspective of emergence can show how something lower can emerge and develop into something higher, in this case, properties of “openness” and “wide horizon” in one’s consciousness.</p>	
<p>Part C</p> <p>Definitions and Clarifications</p> <p>This section will offer a working definition to the scientific perspective of emergence and come clarifications.</p>	

3.1. Epistemological (Weak) Emergence and Ontological (Strong) Emergence

Weak emergence holds that “systemic features at ‘higher’ (or more comprehensive) levels cannot be predicted by any finite knower from the standpoint of the pre-emergent stage, despite a knowledge of the empirical characters and governing laws concerning the ultimate constituents of that system.”²²³ Weak emergence is also known as “*epistemological emergence*, since all the causal work is done at the base level.”²²⁴

Regarding strong emergence, Gregersen states, “Emergent phenomena obtain new causal capacities, which make it possible that higher-level or more comprehensive systems can exert a top-down, selective influence on the lower-level (or local) constituents than would otherwise have obtained.”²²⁵ Strong emergence is also termed “*ontological*, since what is causally effective must be deemed real.”²²⁶

Gregersen points out that weak emergence can “also accord a sort of reality to the higher-order qualities; namely the reality of being an epiphenomenon that should nonetheless be taken with metaphysical seriousness, even if the emergent properties play no causal role of their own.”²²⁷ On this, the “strong emergentist will admit that in many cases emergent properties are only epiphenomena, without any new causal capacities.”²²⁸ One would have to investigate to determine whether an emergent phenomenon manifests as weak or strong emergence.

²²³ Gregersen, “Emergence and Complexity,” 775.

²²⁴ Ibid.

²²⁵ Ibid.

²²⁶ Ibid.

²²⁷ Ibid.

²²⁸ Ibid.

The two epistemological emergences (weak emergences) are *Emergence*¹ and *Emergence*². *Emergence*¹ is a purely logical or computational form of emergence, as investigated in strong programmes of computational complexity (CC). For example, Stuart Kauffman worked within the paradigm of CC with the aim of explaining the evolutionary appearance of life through a bottom-up computational approach.²²⁹ *Emergence*¹ is not “necessarily related to the real physical world (apart from the fact that computer programs are implemented on the hardware of Newtonian machines).”²³⁰ *Emergence*² “refers to cases where new physical properties appear, but are fully dependent on their subvenient physical bases. These properties are nothing but properties or attributes of the underlying level or levels, and ultimately properties of physics.”²³¹ An example of this will be the “emergence of water strictly based on the intrinsic chemical properties of H₂O.”²³²

*Emergence*³ and *Emergence*⁴ are ontological or strong emergence. *Emergence*³ “refers to cases where new emergent properties, based on new spatial or hierarchical configurations, acquire new causal capacities in the context of relatively enduring higher-order systems.”²³³ Here, the emergent systems are not susceptible to their environments but “are able to follow their own programmatic ‘ends’ even under changing circumstances (say, the search for food when there is no food immediately available).”²³⁴

²²⁹ Gregersen, “Emergence and Complexity,” 771.

²³⁰ Ibid., 776.

²³¹ Ibid.

²³² Ibid.

²³³ Ibid.

²³⁴ Ibid.

*Emergence*⁴ refers to special cases where new emergent properties are based on new spatial or hierarchical configurations and “give rise to new causal capacities in the context of relatively enduring higher-order systems exhibiting not only self-referential but also self-reflective and unified features such as human consciousness. In this case one might speak of emergent individuals.”²³⁵ The fourth case of emergence might be controversial “since it assumes the existence of body-mind systems that have the form of self-conscious unity, a form that is usually ascribed only to human persons.”²³⁶ Gregersen notes that Clayton refers to this as “emergentist pluralism” and this allows Clayton to see “the emergence of the human mind as continuous with other sorts of self-reproducing systems,” and as such, the “human person acts as a responsible person in relation to the environment and to him or herself.”²³⁷ They “have the feature of being centres of intentions and autonomous actions.”²³⁸ This is because “what emerges in the human case is a particular psycho-somatic unity, an organism that can do things both mentally and physically.”²³⁹ Clayton points out that we need sciences or modes of study to address the level of complexity that is the human person. By this, Clayton means that he believes in “the real existence and causal efficacy of the conscious or mental dimension of human personhood.”²⁴⁰

²³⁵ Gregersen, “Emergence and Complexity,” 776.

²³⁶ Ibid.

²³⁷ Ibid. Clayton speaks of the idea of “emergentist pluralism” in *Mind and Emergence*, 58, 62.

²³⁸ Ibid.

²³⁹ Clayton, *Mind and Emergence*, 148-149.

²⁴⁰ Ibid., 149.

Following Gregersen's discussion, this thesis leans toward ontological or strong emergence. Strong emergence is closer to the evolutionary perspective of the universe and of life. Gregersen describes an emergent that which wants to follow its own programmatic 'ends' or higher-order systems exhibiting not only self-referential but also self-reflective and unified features such as human consciousness. A description by neurologist Antonio Damasio is an example of strong emergence. He states that every cell in the human body is made of cells that have exhibited intelligent and purposive behaviors not only for survival but also for thriving by pooling resources, so to speak, with other cells. He says that even "single cells had what appeared to be a decisive, unshakable determination to stay alive for as long as the genes inside their microscopic nucleus commanded them to do so."²⁴¹

3.2. Five Different Meanings of Emergence

Clayton points out that emergence is a term that is not easily defined. He says that there are no neutral definitions because "every conceptual clarification is actually a plea for the reader to look at a subject in a particular way."²⁴² If pressed for a definition, Clayton says that he would describe emergence as "*the theory that cosmic evolution repeatedly includes unpredictable, irreducible, and novel appearances.*"²⁴³

In *Mind and Emergence*, Clayton discusses five meanings of emergence that might help in the consideration of "what is the topic that emergence addresses" because in a

²⁴¹ Antonio Damasio, *Self Comes to Mind: Constructing the Conscious Brain* (2010; reprint, New York: Pantheon Books, 2012), 37.

²⁴² Clayton, *Mind and Emergence*, 38-39.

²⁴³ Ibid., 39.

broader discussion, emergence has been used in multiple fields.²⁴⁴ Examining the meanings of the term at each level, we can observe a “transition from very specific scientific domains to increasingly integrative, and hence increasingly philosophical, concepts.”²⁴⁵

The first meaning, E₁, refers to *theories of emergence within specific scientific fields* and describes “features of a specified physical or biological system of which we have some scientific understanding.”²⁴⁶ The specificity of the theory makes it difficult to establish a connection with other fields of science.

E₂ refers to the *levels of emergence within the natural world*, such as “Stuart Kauffman's notion of a new ‘general biology’ or in certain proposed theories of complexity or self-organization.”²⁴⁷ On this, E₂ “expresses postulated connections or laws that may in the future become the basis for one or more branches of science.”²⁴⁸

E₃ refers to *patterns across scientific theories*, and since “it postulates features that are shared by multiple theories within science, E₃ is actually a meta-scientific term.”²⁴⁹ E₃ does not refer to a specific theory but an “observation about a significant pattern that allegedly connects a *range* of scientific theories,” such as the common features found in “autocatalysis, complexity, and self-organization.”²⁵⁰ The common feature can serve as a heuristic function and “recognizing such broader patterns can help to extend existing

²⁴⁴ Clayton, *Mind and Emergence*, 40.

²⁴⁵ Ibid.

²⁴⁶ Ibid. ‘E’ refers to ‘emergence meaning’, for example, ‘E₂’ refers to ‘emergence meaning two’.

²⁴⁷ Ibid., 41.

²⁴⁸ Ibid.

²⁴⁹ Ibid.

²⁵⁰ Ibid.

theories, to formulate insightful new hypotheses, or to launch new interdisciplinary research programmes.”²⁵¹

E₄ refers to a *theory about patterns in the transitions between sciences*, and in this sense, it is a “broader theory about the evolutionary process.”²⁵² E₃ looks for the common features between theories, but E₄ goes beyond in its “attempt to explain why these patterns should exist,” while also allowing one to argue that “similarities and differences across emergent systems are part of a broader pattern in nature.”²⁵³ An example of this is the current work “to understand how chemical structures emerge out of the underlying physics, to reconstruct the biochemical dynamics that underlie the origins of life, and to conceive how complicated neural processes produce cognitive phenomena such as memory, language, rationality, and creativity.”²⁵⁴ E₄ allows one to discern the broader patterns, but in itself, it is not a scientific theory.

E₅ refers to *the metaphysics of emergence*, and it presents hypotheses about the nature of reality as a whole. One may draw evidence or points from E₁ to E₄, but “metaphysical theories are not limited to the inferences from the available evidence.”²⁵⁵ An example of this is Clayton’s conclusion that the implications of the consideration of emergence lead to transcendence.

The work of this thesis takes the meaning of emergence in E₄ and E₅. For example, the emergence of the human person is related to the broader pattern of the universe. This

²⁵¹ Clayton, *Mind and Emergence*, 41.

²⁵² Ibid.

²⁵³ Ibid.

²⁵⁴ Ibid.

²⁵⁵ Ibid., 42.

pattern can only be discerned at a broader level, and it includes the conditions that are favorable to life at the beginning of the universe, right through to the development of culture, which makes the expansion of the human brain possible. E₅ is particularly important for relating theology and science, as we can see in the work of Clayton on emergence and transcendence.²⁵⁶

3.3. Characteristics of Emergence

This thesis has explored the perspective, concepts, and meanings of emergence. Exploring the meaning above tells us of its significance to the discussion of the scientific perspective of emergence. This thesis will now highlight five characteristics of emergence. These are the properties, features, or traits that pertain to the scientific perspective of emergence. They are by no means exhaustive, and we have seen some of them earlier. The characteristics are as follows: (1) monism, (2) hierarchical complexity, (3) no monolithic law of emergence, (4) patterns across levels of emergence, and (5) downward causation. This section will explain what these characteristics are. It is in the next chapter that I will show how these characteristics are important to the discussion of emergence.

3.3.1. Monism

One important feature of emergence is *monism*. It states that “reality is ultimately composed of one basic kind of stuff.”²⁵⁷ Clayton calls this “ontological monism” and notes

²⁵⁶ Clayton presents an overarching metaphysics in his work *In Quest of Freedom*, which speaks of the emergence of spirit in the natural world. Drawing on various theories about patterns in the transitions between sciences, Clayton presented hypotheses about the nature of reality as a whole. This reality includes freedom and self-transcendence. See Philip Clayton, *In Quest of Freedom: The Emergence of Spirit in the Natural World*, ed. Michael G. Parker and Thomas M. Schmidt (Gottingen, Germany: Vandenhoeck & Ruprecht, 2009), 141.

²⁵⁷ Clayton, *Mind and Emergence*, 4.

that this is different from physicalism, which says that everything is physical and only the law of physics applies.²⁵⁸ This perspective aligns with the theory that the universe began with the Big Bang and that there can be a trajectory from matter to life. It also gives ground to the next characteristic, which is hierarchical complexity.

3.3.2. *Hierarchical complexity*

Hierarchical complexity recognizes that there is a hierarchical structure in the world that has been in place since the beginning of the universe. This characteristic takes into account the evolutionary perspective of the universe. Mathematician and physicist George Ellis states, “The emergence of complex structure, including conscious life, from simpler physical structures is based on tightly structured non-linear relations between components, designed to produce specific higher-level functioning.”²⁵⁹ Ellis describes self-conscious human beings as the “highest level of emergence.”²⁶⁰ Each higher level will have more entities “but fewer kinds of entities at the lower levels (atoms are made just of protons, neutrons, and electrons), so complex objects with complex behaviour are made by highly structured combinations of simpler objects with simpler behaviour.”²⁶¹ What happens at the next level higher in terms of physical causation is caused by the lower levels.²⁶² The “existence of higher-level complex behaviour, which does not occur at the lower levels, then emerges from the lower-level properties both structurally and functionally (at each

²⁵⁸ Clayton, *Mind and Emergence*, 4.

²⁵⁹ George F.R. Ellis, “On the Nature of Emergent Reality,” in Clayton and Davies, 79-80.

²⁶⁰ *Ibid.*, 81.

²⁶¹ *Ibid.*, 80.

²⁶² *Ibid.*

moment) and in evolutionary and developmental terms (over time).”²⁶³ This is also an example of an increase in complexity and proof that the lower is contained in the higher but that the higher is a completely new emergent that had not previously existed before.²⁶⁴ Refer to Table 2 below for the hierarchy of structure. Clayton tells us that the “rapid expansion of solid empirical work in complexity theory now allows us to quantify the increase in complexity, at least in some cases.”²⁶⁵

Table 2. The hierarchy of structure

Sociology/ Politics/ Economics
Animal Behavior/ Psychology
Botany/ Zoology/ Physiology
Cell Biology
Biochemistry/ Molecular Biology
Molecular Chemistry
Atomic Physics
Nuclear Physics
Particle Physics

Source: Ellis, “On the Nature of Emergent Reality,” 80.

3.3.3. *No monolithic law of emergence*

No monolithic law of emergence is another characteristic that is important to the scientific perspective of emergence. Clayton points out that many “of the details of the process of emergence – the manner of the emergence of one level from another, the qualities of the emergent level, the degree to which the ‘lower’ controls the ‘higher,’ etc. –

²⁶³ Ellis, “Nature of Emergent Reality,” 80.

²⁶⁴ Arthur Peacocke presented similar but more detailed hierarchical levels in his work. Arthur Peacocke, *Theology for a Scientific Age: Being and Becoming – Natural, Divine, and Human* (Minneapolis: Fortress Press, 1993), 217.

²⁶⁵ Clayton, *Mind and Emergence*, 60.

vary greatly depending on which instance of emergence one is considering.”²⁶⁶ This characteristic is important in relation to E4. Not having a monolithic law of emergence will allow one to explore and discern patterns in the transitions between sciences.

The work of biophysicist Harold J. Morowitz is an example of why there should not be only one perspective on what constitutes emergence. He presents a “catalog of 28 observed instances that have emergence in common but vary over an enormous range in the agents, interactions, hierarchical levels, and character of the interaction rules and the pruning rules.”²⁶⁷ The twenty-eight observed instances of emergence are derived “from an almost linear chronological sequence from the beginning of the universe.”²⁶⁸ The “complexity, diversity, and richness that we see today [in the universe,] on all scales of sizes have emerged since the beginning in a long sequence of physical process.”²⁶⁹ The twenty-eight instances of emergence that Morowitz observed are the primordium, large-scale cosmological structures, stars and nucleosynthesis, elements and the periodic table, solar systems, planetary structure, geospheres, metabolism, cells-prokaryotes, cells-eukaryotes, multicellularity, neurons and animalness, deuterostomes, cephalization, fish, amphibians, reptiles, stem mammals, arboreal mammals, primates, apes, hominids, tool makers, language, agriculture, technology, philosophy, and the next emergence (i.e., the spirit).²⁷⁰ Morowitz’s presentation gives us a sense of how broad the concept of emergence

²⁶⁶ Clayton, *Mind and Emergence*, 61.

²⁶⁷ Morowitz, *The Emergence of Everything*, 25.

²⁶⁸ Ibid.

²⁶⁹ Davies, “Towards an Emergentist Worldview,” 3.

²⁷⁰ Morowitz, “Emergence of Transcendence,” in Gregersen, 178.

can be. It is understandable why Clayton states that “emergence should be viewed as a term of family resemblance.”²⁷¹

3.3.4. *Patterns across levels of emergence*

The point above connects us to the next important characteristic in the argument of emergence: *patterns across levels of emergence*. Clayton identifies five particular commonalities shared by various instances of emergence in natural history that we can recognize and defend. This does not eliminate other commonalities where they may exist. First, “L1 is prior in natural history,” and second, “L2 depends on L1, such that if the states in L1 did not exist, the qualities in L2 would not exist.”²⁷² The third is the point that “L2 is the result of a sufficient degree of complexity in L1. In many cases one can even identify a particular level of criticality which, when reached, will cause the system to begin manifesting new emergent properties.”²⁷³ In other words, an increase in complexity is necessary for a new emergent. This leads to the fourth point Clayton makes, which is that “one can sometimes predict the emergence of some new or emergent qualities on the basis of what one knows about L1.”²⁷⁴ However, Clayton points out that using L1 will not allow one to “be able to predict (i) the precise nature of these qualities, (ii) the rules that govern their interaction (or their phenomenological patterns), or (iii) the sorts of emergent levels to which they in turn may give rise in due course.”²⁷⁵ The final important point in the

²⁷¹ Clayton, *Mind and Emergence*, 61.

²⁷² Ibid. ‘L’ refers to ‘level’.

²⁷³ Ibid.

²⁷⁴ Ibid.

²⁷⁵ Ibid.

perspective of emergence speaks to the irreducibility of emergence. Clayton states that “L2 is not reducible to L1 in any of the standard senses of ‘reduction’ in the philosophy of science literature: causal, explanatory, metaphysical, or ontological reduction.”²⁷⁶

This relates to the fourth meaning of emergence in E₄, which, as we have seen above, is concerning the *theory about patterns in the transitions between sciences*. Like E₄, this allows one to discern the broader patterns, but in itself it is not a scientific theory.

3.3.5. Downward causation

The final characteristic is *downward causation*. The basic idea is that “L2 can exercise some causal effect on L1” at an ontological level.²⁷⁷ Clayton states that “the world is such that it produces systems whose emergent properties exercise their own distinct causal influences on each other and on (at least) the next lower level in the hierarchy.”²⁷⁸ One example of downward-causation, or top-down causation, is by Donald Campbell (1974) to denote “the way in which the network of an organism’s relationship to its environment and its behavior patterns together determine in the course of time the actual DNA sequences at the molecular level present in an evolved organism.”²⁷⁹ However, “from a ‘bottom-up’ viewpoint of that organism once in existence, a molecular biologist would tend to describe its form and behavior as a consequence of the same DNA sequence.”²⁸⁰

²⁷⁶ Clayton, *Mind and Emergence*, 61.

²⁷⁷ Ibid.

²⁷⁸ Ibid.

²⁷⁹ Arthur Peacocke, “Complexity, Emergence, and Divine Creativity,” in Gregersen, 191.

²⁸⁰ Ibid.

Campbell argues for a top-down causal role in the “evolutionary development of efficacious jaws made of suitable proteins in a worker termite.”²⁸¹

Downward-causation, or top-down causation, tells us that there is an interconnectedness within the conditions of how something can emerge. Another example, which we will see in more detail, is the uniqueness of the human person, which has emerged during the evolutionary process and has also been shaped by their environment such as by culture.

From here, we can see the broadness of the term emergence. The first part of this chapter has shown how it is related to the term complexity and its uses, such as against the position of reductionists. However, I pointed out that the understanding of emergence is broader by using Clayton’s explanation of the variety of its meanings and characteristics. It does not seem complete without a concrete example, and the next section of this chapter will touch on the emergence of the human person from an evolutionary perspective. Even without the thesis intending to do so, one can observe that the broader patterns observed by Donald and Fuster in the next section will seem extraordinarily close to the transcendental anthropology of Rahner that we have seen in the first chapter, such as that the human person is ‘open’ and continually ‘self-expanding’.

²⁸¹ Peacocke, “Complexity, Emergence, Divine Creativity,” 191.

Part B

In the second part of this chapter, I will propose that the human person, who has achieved consciousness, is essentially open and stands before a wide horizon. Furthermore, openness before a wide horizon is an emergent trait that comes from consciousness. Properties such as ‘openness’ or ‘wide horizon’ are things that are intangible. Nonetheless, I will demonstrate that they are real by using the scientific perspective of emergence that was discussed previously, showing the possibility of integrating a variety of patterns across levels of emergence as an example of how something lower can emerge and develop into something higher.

4. The Transition to Hybrid-Minds

Donald tells us that since “complex life evolved from inert matter, it follows that consciousness also evolved from inert matter.”²⁸² He calls this “emergentism,” and it is a credible approach because consciousness is “an aspect of the natural world” and “must have evolved, like every other property of life.”²⁸³ Donald’s perspective is worth considering. Donald expands the model of how the human person emerged by focusing on more than the human person alone. He argues that human minds are not isolated. His “central thesis is that human beings have evolved a completely novel cognitive strategy: brain-culture symbiosis,” which he calls ‘hybrid-mind.’²⁸⁴ As a consequence of this symbiosis, “the human brain cannot realize its design potential unless it is immersed in a

²⁸² Merlin Donald, *A Mind So Rare* (New York: Norton, 2001), 96.

²⁸³ Ibid.

²⁸⁴ Brief introduction of Merlin Donald from Queen’s university website, accessed on September 3, 2016, www.queensu.ca/psychology/people/emeritus-and-retired-faculty/merlin-donald.

distributed communication network, that is, a culture, during its development. The human brain is, quite literally, specifically adapted for functioning in a complex symbolic culture.”²⁸⁵ It must be greatly emphasized that the key to understanding how Donald sees human cognitive development lies in culture. Thus, his work speaks of the co-evolution of the brain and culture. Culture is the reason why we are the way we are today. To underscore the importance of culture, Donald states that any “serious failure to establish this social-cognitive connection can result in delayed development and in some cases, such as autism, in a permanent developmental disability.”²⁸⁶ In fact, the early cultural bond is important because “the human brain has evolved a dependency on culturally stored information for the realization of its design potential.”²⁸⁷

According to Donald, the great divide between humans and other species is the “computational divide,” also known as the “symbolic computation.”²⁸⁸ It is in this sense that Donald believes that we might be called “hybrid minds,” as we maintain a balance between two computational modes of operation, which is part analog and part symbolic.²⁸⁹ As human persons, we operate with conventional nervous systems, but we are also capable of “constructing languages and symbols, such as those found in storytelling, art, and mathematics. These typify the symbolic mode.”²⁹⁰

²⁸⁵ Extracted from the university’s website as above, accessed on September 3, 2016, www.queensu.ca/psychology/people/emeritus-and-retired-faculty/merlin-donald.

²⁸⁶ Merlin Donald, “How Culture and Brain Mechanisms Interact in Decision Making,” in *Better than Conscious? Decision-making, the Human Mind, and Implications for Institutions*, ed. Christoph Engel and Wolf Singer (Cambridge, MA: The MIT Press, 2008), 195.

²⁸⁷ Donald, “Culture and Brain Mechanisms,” 195.

²⁸⁸ Donald, *A Mind So Rare*, 153.

²⁸⁹ *Ibid.*, 154.

²⁹⁰ *Ibid.*, 154-155.

The language inside the human mind is a symbolic representation that arises from and describes phenomena outside the brain. For Donald, “culture leads, and mind follows. In other ways, mind leads. Symbolic culture is nothing without the human mind, while the human mind, without culture, remains locked in incoherently upon itself.”²⁹¹

Many of the elements present in Donald’s work agree with the research by Deacon, whose work has combined human evolutionary biology and neuroscience. In his book, Deacon calls human beings “symbolic species.”²⁹² He argues that “the doorway into this virtual world was opened to us alone by the evolution of language, because language is not merely a mode of communication, it is also the outward expression of an unusual mode of thought – symbolic representation.”²⁹³ Language makes possible the novelty that arises from the emergence of the human person. Language “offers a means for generating an essentially infinite variety of novel representations, and an unprecedented inferential engine for predicting events, organizing memories, and planning behaviors.”²⁹⁴ In addition, language “entirely shapes our thinking and the ways we know the physical world.”²⁹⁵

Donald presents three main transitions of human cognitive evolution. The transitions which caused three shifts in the nature of consciousness during our evolution, are as follows: (1) more precise and self-conscious control of action in mimesis, (2) richer and faster accumulation of cultural knowledge in speech, and (3) much more powerful and

²⁹¹ Donald, *A Mind So Rare*, 157.

²⁹² Terrence W. Deacon, *The Symbolic Species: The Co-Evolution of Language and the Brain* (New York: W.W. Norton, 1997).

²⁹³ Ibid., 22.

²⁹⁴ Ibid.

²⁹⁵ Ibid.

abstract reflective cultures, driven by symbolic technology.²⁹⁶ They are important because the transitions demonstrate the expansion of the human person, which, among other things, resulted in the ability for symbolic capacity and openness.

Donald places the mimesis stage in early hominins, peaking in *homo erectus* to be from about four million to four hundred thousand years ago.²⁹⁷ According to Donald, “the first cognitive transition seems to have revolved around one central issue, the invention of culture as a collective means of accumulating experience and custom,” and this was the “birth of the actor, the tribe, and the gesture.”²⁹⁸ The stage of mimesis is the “result of evolving better conscious control over action.”²⁹⁹ Donald states, “In its purest form, it is epitomized by four uniquely human abilities: mime, imitation, skill, and gesture..., [and the] most basic form of mimetic action is mime, the imaginative reenactment of an event.”³⁰⁰ Donald tells us that they are “direct offshoots of the human executive brain system and the Executive Suite.”³⁰¹

The second transition to mythic culture was made by the early humans, peaking in *homo sapiens* about half a million years ago until today.³⁰² This transition was made possible by language. Donald writes that “the scattered, concrete repertoire of mimetic

²⁹⁶ Donald, *A Mind So Rare*, 262.

²⁹⁷ Merlin Donald, “Mimesis Theory Re-Examined, Twenty Years after the Fact,” in *Evolution of Mind, Brain, and Culture*, ed. Gary Hatfield and Holly Pittman, (Philadelphia, PA: Pennsylvania Press, 2013), 177.

²⁹⁸ Donald, *A Mind So Rare*, 262.

²⁹⁹ Ibid.

³⁰⁰ Ibid.

³⁰¹ Ibid.

³⁰² Donald, “Mimesis Theory Re-Examined,” 177.

culture came under the governance of narrative thought and ultimately, integrative myth.”³⁰³ This stage preceded the appearance of modern *homo sapiens*. This stage is where “we gain new powers and can trade, amplify, and crystallize thoughts, remember with greater clarity, share memory, and enjoy membership in an enduring cognitive entity that transcends the individual.”³⁰⁴

The third transition is where we can truly speak of how the human person has emerged into something essentially higher in new and surprising ways. Donald tells us that the third transition can account for “astonishing changes that have taken place more recently,” and “these changes revolve around one central trend that has dominated the history of the past 20 000 years: the externalisation of memory.”³⁰⁵ In the past, people had to depend on their “natural or biological memory capacity.”³⁰⁶ That is not so today. There are many factors that account for the emergence of the human person. For example, the human brain has grown in its plasticity, especially “in the way it carries out its cognitive business, individually and in groups, that the core configuration of skills that defines a mind actually varies significantly as a function of different kinds of culture.”³⁰⁷ The cultural factors that shape the human person give him or her literacy skills, and the ability for literacy changes the development of the brain. Donald asks us to consider what education does for the person. Please see Donald’s diagram in Table 3 below.

³⁰³ Merlin Donald, “The Definition of Human Nature,” in *The New Brain Sciences: Perils and Prospects*, ed. David A. Rees and Steven P. R. Rose, 34-58 (New York: Cambridge University Press, 2004), 49.

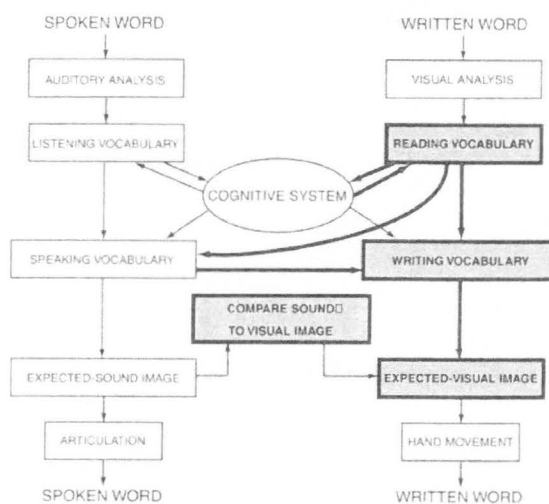
³⁰⁴ Donald, *A Mind So Rare*, 274

³⁰⁵ Donald, “Definition of Human Nature,” 52.

³⁰⁶ Ibid.

³⁰⁷ Donald, *A Mind So Rare*, 286.

Table 3. Bare outline of the literacy brain.



Source: Donald, *A Mind So Rare*, 303.

This diagram shows a bare outline of the literacy brain, which includes several immensely complex neuronal networks that must be wired together and interwoven with the rest of the cognitive system when a brain learns to read and write. Since literacy skills are usually piggy-backed onto the speech system, the speech brain is also outlined in the figure, in a parallel column (left side) that traces the path of a spoken word as the brain processes it. The shaded boxes and thick black arrows highlight the special networks for written language. These must be added to the brain's basic network architecture when we learn to read or write. They include a reading vocabulary and a separate writing vocabulary, which does not always correspond to the reading one (this is usually the case in second languages). Reading and writing entail semi-independent networks....³⁰⁸

According to Donald, “symbolic technology has changed the way we think, remember, and experience reality, individually and as a collectivity.”³⁰⁹ Symbolic capacity, according to Donald’s basic outline, has expanded the way one can experience the world and expand one’s consciousness. Skills in literacy run parallel to the verbal symbolic capacity. Literacy opens up another dimension of living and enriches the horizons of a

³⁰⁸ Donald, *A Mind So Rare*, 303.

³⁰⁹ Ibid.

person. Being able to store memory externally reshapes the way that we, as persons, think, speak, and perceive.

The paradigm Donald offers on the expanding consciousness of the human person as a result of his or her symbolic capacity developed through culture also shows what it means to be in the process of becoming something essentially higher. In this case, the process of active self-transcendence continues in a trajectory of orderly complexity at the lower level that makes up the brain, which allows for the expansion of awareness and consciousness of the human person possessing a ‘self’.

Donald continues his argument by stating that “the external memory field creates a mirror world of consciousness” that “reflects the architecture of biological memory back into the symbolic environment, and this mirror image is then reflected back into the brain.”³¹⁰ What happens then is that the core-consciousness of the human person stands in the middle “between two systems of representation, one stored inside the head and the other outside.”³¹¹ The external memory “fundamentally changes the architecture of consciousness.”³¹² Donald demonstrates this by presenting two diagrams. Table 4 shows the memory system stored inside the head and Table 5 shows the memory system stored both inside and outside the head. They are placed side by side for comparison.

³¹⁰ Donald, *A Mind So Rare*, 310.

³¹¹ Ibid.

³¹² Ibid.

Table 4. Memory stored inside the head.

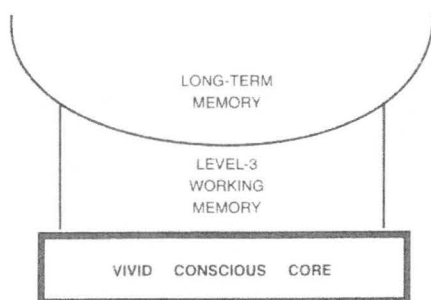
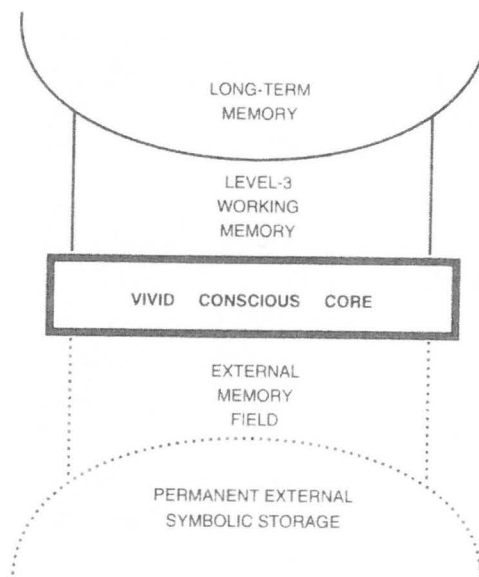


Table 5. Memory stored inside and outside the head.



Source: Table 4, Donald, *A Mind So Rare*, 310. Table 5, Donald, *A Mind So Rare*, 311.

The “vivid conscious core” in the diagram is where the ‘self-as-subject-and-knower’ is present. Table 4 shows how we rely on our internal memory, which is limited, and how relying too heavily on our natural or biological memory limits us in our development. However, Table 5 shows that when we plug-in or connect ourselves to a powerful symbolic device, such as a book or the Internet, our operational mental architecture expands vastly. Our awareness as persons in this day and age always stands “between two simultaneously present storage systems, one internal and biological, the other external and technological, each with long-term and short-term aspects.”³¹³ Thus, driven by the creative driver that is our vivid conscious core, we can choose how we like to direct our awareness and develop better ways of thinking.

³¹³ Donald, *A Mind So Rare*, 311.

5. Memory of the Future

Fuster's study of the human brain is relevant to Donald's research. Donald tells us that the human level of awareness is different because the 'self-conscious' actor exists and because the human person is able to regulate his or her thoughts in immediate-and-longer-term governance. This was due to the expansions of the prefrontal cortex and the new-cerebellum in the brain system.³¹⁴ Fuster tells us that the prefrontal cortex region plays an important part in the higher functions of the brain. The clinical neurological literature uses terms such as the "'supervisory system,' 'prioritizing function,' 'hierarchy formation,' and 'working memory management'".³¹⁵ Fuster describes the general function of the prefrontal cortex as "the temporal organization of goal-directed in the domains of behavior, reasoning, and language."³¹⁶ The pre-frontal cortex region has these five capacities: (1) integration of behavior over time, (2) establishment and manipulation of information in working memory, (3) maintenance of attention, (4) preparation for action, and (5) inhibitory control of behavior.³¹⁷

Importantly, Fuster tells us that the human brain retains something of its past. It is what Donald describes as vestigial brains, through which "we have inherited a deep mental structure that is a direct reflection of the evolutionary history of our species."³¹⁸ According to Fuster, the human brain cannot predict evolution, but it can predict the "consequences

³¹⁴ Donald, *A Mind So Rare*, 196.

³¹⁵ Ibid.

³¹⁶ Joaquín M. Fuster, *The Neuroscience of Freedom and Creativity* (New York: Cambridge University Press), 9.

³¹⁷ Joaquín M. Fuster, *Cortex and Mind: Unifying Cognition* (Oxford: Oxford University Press, 2003).

³¹⁸ Donald, *A Mind So Rare*, 106.

of its action, with them to predict and shape further actions in a continuous cycle, the perception/action (PA) cycle, which functionally links the organism to its environment.”³¹⁹ The PA cycle in the human person occurs in our prefrontal cortex. The prefrontal cortex “is the highest structure in that cycle, which integrates the past with the future – however near or distant either is – in the course of behavior, language, and reasoning.”³²⁰

There are three points that are important for the consideration of emergence. First, “the PA cycle also has deep roots in evolution.”³²¹ Second, “the human brain, which sustains the PA cycle with the cortex, is the most complex adaptive system in the universe. It is an open system like all living systems.”³²² This is why the human brain is “permanently in quasi-equilibrium but also in constant exchange with its environment to maintain that equilibrium.”³²³ Finally, it is due to the “prefrontal cortex inserted in the PA cycle, the human brain, unlike any other, develops a prospective temporal dimension.”³²⁴ This ability allows the human brain to make “advanced long-term adaptive changes in its environment.”³²⁵ Fuster also adds that “language endows the human brain with the ability to record those changes, to codify them, and to institutionalize them.”³²⁶

³¹⁹ Fuster, *The Neuroscience of Freedom*, 29.

³²⁰ Ibid.

³²¹ Ibid.

³²² Ibid.

³²³ Ibid.

³²⁴ Ibid.

³²⁵ Ibid.

³²⁶ Ibid.

The ability to prepare for future events is what Fuster calls “memory of the future.”³²⁷ The term ‘future memory’ seems odd when we consider that “there is no planned or future action without the memory, by association, of similar action in the past, by us or by others.”³²⁸ However, “planning and decision-making consist in recreating old actions in new fashion.”³²⁹ Planning for future actions means “devising new PA cycles with old cognits.”³³⁰ As Fuster explains, “By doing this, the prefrontal cortex makes of the human brain a predictive organ, predictive of its own actions and of their consequences.”³³¹ He adds, “Insofar as the ability to decide, to plan, and to create new PA cycles is at the core of choosing between alternative courses of action, the prefrontal cortex makes the human brain free to act.”³³²

Fuster’s framework on the brain’s predictive ability also includes drawing from resources outside a person, namely, according to Donald, culture. Future memory does not only refer to immediate planning, such as what to eat for lunch tomorrow. This ability is also related to the process of seeking reward, usually for the good and well-being of the person. We can plug in and draw deeply from the external memories within our grasp and then find ourselves before a wide and an almost endless horizon. It can give the person a sense of freedom and newness. Consider the diagram presented by Fuster in Table 6. Fuster speaks of the convergence of all active forms of memory before making a decision.

³²⁷ Fuster, *The Neuroscience of Freedom*, 124-156.

³²⁸ Ibid., 126.

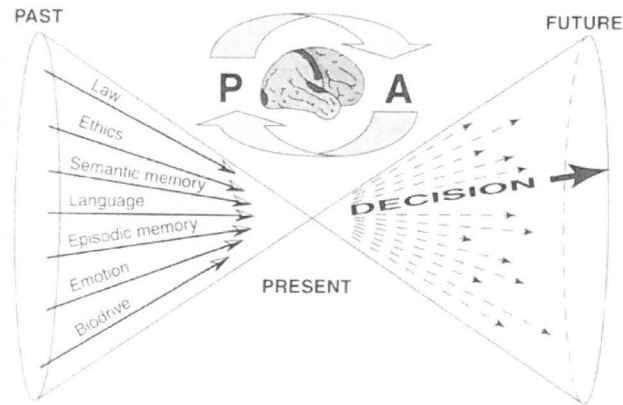
³²⁹ Ibid.

³³⁰ Ibid.

³³¹ Ibid.

³³² Ibid.

Table 6. Fuster's presentation of PA from the past, present and to the future



Source: Fuster, *The Neuroscience of Freedom*, figure 5.1.

The two cones of decision-making, the perceptual (P) converging on the present, the executive (A) diverging from it into the future. The converging influences originate in a multitude of cortical cognits representing all active forms of memory, in addition to the subcortical biological drives weighing on a decision. The decision is a resultant - chosen - executive vector of action among the many possible alternatives of action and 'affordance'.³³³

6. Cultural Scaffolding

The idea of scaffolding affirms the work of Donald and Fuster. Donald writes that the external memory field, which gives us sharper and more durable mental representations, allows the conscious mind to reflect on thought itself and to evolve longer, more abstract, procedures that serve to verify and control the quality of its own actions.³³⁴ That "results in a scaffolded cultural process that can accumulate and improve over time."³³⁵ Warren S. Brown argues that cultural scaffolding is a quality of human

³³³ Fuster, *The Neuroscience of Freedom*, 141.

³³⁴ Donald, *A Mind So Rare*, 313.

³³⁵ Ibid.

distinctiveness. Brown, who references Andy Clark's book *Being There*, states that some of the most important aspects of human intelligence are not within the brain or body at all but in "external scaffolding," which is the emergence of the highest form of human mental processing.³³⁶ Clark states, "We use intelligence to structure our environment so that we can succeed with less intelligence. Our brains make the world smart so that we can be dumb in peace! . . . It is the human brain plus these chunks of external scaffolding that finally constitutes the smart, rational inference engine we call mind."³³⁷

Donald tells us that the emergence of the human ability for symbolic computing was the great divide. It is not symbolic computing in itself that is important; it is the forward trajectory of expansion and becoming something essentially higher. It is a way for human beings to flourish in the world. Brown states that "some of the most important elements of human mental capacities arise from that which the long cultural history of the human race has built into our environments to augment our cognitive processes."³³⁸ Our social embeddedness in a "social and cultural context serves not only to influence the self-assembly and continual reorganization of our bodily neurocognitive systems, but it also offloads much of the cognitive work that allows us to act intelligently and creatively and to flourish as persons and as societies."³³⁹ It is interesting that Brown points out that we become intelligent "by learning to use 'tools' that we did not have to invent."³⁴⁰ It is by

³³⁶ Brown, "Emergence of Human Distinctiveness," 120.

³³⁷ Andy Clark, *Being There: Putting Brain, Body, and World Together Again* (Cambridge, MA: MIT Press, 1997), 180.

³³⁸ Brown, "Emergence of Human Distinctiveness," 121.

³³⁹ Ibid.

³⁴⁰ Ibid.

this that “we could also reasonably argue that human social intelligence—our deep sociality—is scaffolded by cultural systems within which we learn to negotiate the social world: families, nurseries, schools, universities, clubs, businesses, governments, etc.”³⁴¹ Thus, “our process of self-assembly in becoming uniquely human is a matter of learning to marshal the benefits of interpersonal and social systems that we do not need to invent.”³⁴²

To summarize this section, the aspect of the human person is enriched when one’s understanding is drawn from patterns across levels of emergence and across scientific theories. For example, Donald’s work presented a trajectory of the gradual series of a hominid’s evolutionary changes, from Miocene apes to modern humans.³⁴³ He states that his model is the “outcome of a cross-disciplinary project” and was “constructed from ‘big facts’; that is, the most enduring, and relatively stable, knowledge emanating from such fields as cognitive science, evolutionary biology, developmental psychology, comparative neuroanatomy, paleontology, archaeology, psycholinguistics, and anthropology.”³⁴⁴

³⁴¹ Brown, “Emergence of Human Distinctiveness,” 121.

³⁴² Ibid.

³⁴³ Donald, “Definition of Human Nature,” 198.

³⁴⁴ Merlin Donald, “Mimesis Theory Re-Examined, Twenty Years after the Fact,” in *Evolution of Mind, Brain, and Culture*, ed. Gary Hatfield and Holly Pittman (Philadelphia, PA: Pennsylvania Press, 2013), 174.

Part C

7. Conclusion: Definition and Clarifications

It is difficult to define emergence with a degree of certainty. Goodenough and Deacon state that emergence not only surrounds us in the non-living world, but it is also the key dynamic of living organisms. This description reminds me of the description of the living ‘force’ in the Star Wars franchise. The definition I offer would place me in the same camp as Clayton and Gregersen.

My working definition of emergence is as follows: *emergence is a scientific perspective by which we integrate the evolutionary perspective to describe how something, due to an increase in complexity, can emerge from the lower to become something essentially higher, often in new ways that are unpredictable, irreducible, novel, and surprising.*

Two points of clarifications are necessary. These clarifications were raised by Clayton on the doubts one may have on emergence. First, it concerns the disparity between science and philosophy. Clayton writes that “philosophy requires theories that are unified, consistent, and as conceptually exact as possible, theories that can be applied without ambiguity across a wide variety of fields.”³⁴⁵ Yet, “the theoretical contexts are so radically different for any two cases of emergent phenomena in the natural world,” such as between “the emergence of the classical physical world from quantum mechanical states.”³⁴⁶ Clayton also points out that there is no such thing as “a science of emergence.”³⁴⁷ However,

³⁴⁵ Clayton, *Mind and Emergence*, 45.

³⁴⁶ Ibid.

³⁴⁷ Ibid.

Clayton notes that “what the scientific theories describe are, at least in some cases, emergent phenomena. But this observation is meta-scientific or philosophical rather than directly scientific.”³⁴⁸

The example I presented was guided by my own philosophical enquiry and my study of the patterns across scientific theories. There are commonalities in the work of Donald and Fuster. Clayton points out that this method might not seem attractive to those who want a more rigorous theory. His point is that “emergence is disanalogous, since a theory in this field will not be successful unless it is derived from more than one scientific discipline.”³⁴⁹ Since emergence is considered a perspective and not a theory of science, it is “an overarching concept that must pertain to theoretical structures and results in multiple fields. As a consequence, it cannot draw too heavily on the details of theories in any particular discipline.”³⁵⁰

In the next chapter, I will argue that this scientific perspective of emergence is congruent with and can enrich Rahner’s notion of active self-transcendence.

³⁴⁸ Clayton, *Mind and Emergence*, 45.

³⁴⁹ Ibid., 46.

³⁵⁰ Ibid.

Chapter 3

Active Self-Transcendence and the Scientific Perspective of Emergence

I maintain in this thesis that the scientific perspective of emergence can add robustness to Rahner's notion of active self-transcendence. In this chapter, I will argue that both positions inherently share a common premise and that the characteristics that define emergence are also present in active self-transcendence in such ways that active self-transcendence can incorporate the characteristics of emergence in its description of how matter can increase in complexity until it becomes something essentially higher.

As was mentioned in the first chapter, Rahner has been part of the dialogue between theology and science even before the Second Vatican Council. He grappled with the scientific perspective of the universe, as evidenced in his writings. In "Natural Science and Reasonable Faith," he tries to "forge a link between theology and the basic concepts of an evolutionary 'world view'" and on "the question of the evolution of living beings and the idea of a universal evolutionary development of the cosmos."³⁵¹ The notion of active self-transcendence is integrated in the evolutionary view of the world.

There are more similarities than dissimilarities between active self-transcendence and emergence. Davies invites his readers to move toward an emergentist worldview. He stated earlier that the universe started out in a simple, almost totally featureless state, but the complexity, diversity, and richness on all scales of size have emerged since the Big Bang in a long sequence of physical processes.³⁵² He writes that "scientists would like to

³⁵¹ Rahner, "Natural Science Reasonable Faith," 33.

³⁵² Davies, "Towards an Emergentist Worldview," 3.

understand the nature and origin of this complexity.”³⁵³ I could add that the rest of us would also like to understand, but I do not know if that is necessarily true. What is true is that the scientific perspective of emergence has enabled those who are interested in understanding to have some limited grasp of the complexity required to give rise to something that has emerged from an essentially lower level. Thus, while we say that the notion of active self-transcendence was developed with an evolutionary view in mind, the same can be said of the “emergence theory [that] was formed in the safe context of the Darwinian revolution in science.”³⁵⁴

1. Putting It Together

Rahner presents his view on how nature develops through his notion of active self-transcendence. I refer to emergence as a scientific perspective in this thesis, and I think it is important to flesh out the difference between a perspective and a notion. Perspective is synonymous with viewpoint, standpoint, or outlook. Clayton believes that emergence is a philosophical position, and I agree with him. However, I prefer to use the term ‘scientific perspective’ within a specific philosophical position to describe the nature of things.³⁵⁵ Though emergence is sometimes described as “emergence theory,” even in this thesis, it is not a specific theory of science like the theory of the Big Bang.³⁵⁶ As such, a scientific perspective seems to be a good description.

³⁵³ Davies, “Towards an Emergentist Worldview,” 3.

³⁵⁴ Gregersen, “Emergence and Complexity,” 768.

³⁵⁵ My view is that the philosophical position of emergence lies in the characteristics which I have explored in the previous chapter.

³⁵⁶ Clayton and Gregersen use the term ‘emergence theory’ in their work.

Notion is synonymous with idea, concept, and perception. Rahner speaks of the “unity of philosophy and theology” in his work, and this unity is essential for an understanding that embodies existence and the Christian life.³⁵⁷ Like emergence, Rahner’s position is not a scientific theory. While examining theology from an evolutionary perspective, Rahner described a philosophical position that is identical to the philosophical position of emergence. What I mean by similar position is not to say that active self-transcendence and emergence are identical but that they share similar orientations, such as of seeing the unity of all things and a recognition of a hierarchy between the higher and lower in terms of complexity. This is because both positions were developed with an evolutionary theory in mind.

In the first chapter, I defined Rahner’s notion of active self-transcendence in two parts. *Active self-transcendence can be described as matter developing in a process of becoming whereby the higher levels are orientated in terms of an ever-increasing complexity with and through the lower levels of matter, giving rise to something substantially new, a leap into something essentially higher. This is made possible through the creative power of the absolute fullness of being that is so intrinsic to the finite existent that this finite existent is empowered to achieve a real and active self-transcendence.*³⁵⁸ I presented the definition of active self-transcendence in two parts because the first part clearly shows that Rahner has weaved an evolutionary perspective into his notion of active self-transcendence, while the second incorporates the element of faith and explains how there can be an increase in complexity resulting in the higher from the lower.

³⁵⁷ Rahner, *Foundations of Christian Faith*, 10-11.

³⁵⁸ Refer to page 31.

Earlier, I defined emergence as follows: *Emergence is a scientific perspective by which we integrate the evolutionary perspective to describe how something, due to an increase in complexity, can emerge from the lower to become something essentially higher, often in new ways that are unpredictable, irreducible, novel, and surprising.*³⁵⁹ What I assert in this thesis is that emergence can best concretize the general principles and truth of Rahner's notion of active self-transcendence. Furthermore, the meanings and characteristics of emergence from a scientific perspective can also belong to the notion of active self-transcendence. This is especially true because they both share similar philosophical positions.

An obvious question then is, what are the characteristics in Rahner's notion of active self-transcendence? In the first chapter, I pointed out some of the key words that Rahner uses in *Foundations* to describe the notion of active self-transcendence. The key words can also be considered as part of the characteristics of active self-transcendence. They include "becoming" (as in "becoming something more"), "surpassing of self," "intrinsic increase of its own being," and "emptiness actively achieving its own fullness."³⁶⁰ Rahner sees that a finite existence is empowered to achieve a real and *active* self-transcendence. This is possible because of the power of the absolute fullness of being that is *intrinsic* in the finite existence. What is important to note now is that the notion of self-transcendence "includes transcendence into something substantially new, a leap to something *essentially* higher."³⁶¹ The characteristics of active self-transcendence are

³⁵⁹ Refer to page 82.

³⁶⁰ Rahner, *Foundations of Christian Faith*, 184. These concepts are similar to his essay "Christology within an Evolutionary View," *Theological Investigations*, 165-166.

³⁶¹ Rahner, *Foundations of Christian Faith*, 185.

similar to those of the characteristics of emergence, as I will argue below.³⁶² But first, I will present an outline of my argument of how the scientific perspective of emergence can give robustness to Rahner's notion of active self-transcendence in table 7.

Table 7: Outline of how emergence enriches active self-transcendence

The scientific perspective of emergence	The notion of active self-transcendence
<p>'Scientific perspective' within a specific philosophical position to describe the nature of things. (My working definition of emergence) <i>Emergence is a scientific perspective by which we integrate the evolutionary perspective to describe how something, due to an increase in complexity, can emerge from the lower to become something essentially higher, often in new ways that are unpredictable, irreducible, novel, and surprising.</i> (82)</p> <p>1.1. The Unity of All Things Monism, the idea that reality is ultimately composed of one basic kind of stuff. (85)</p> <p>1.2. Hierarchical Complexity: Higher and Lower. (87-90)</p> <p>1.3. No Monolithic Law (90)</p> <p>1.4. Patterns Across Levels of Emergence (90-91)</p>	<p>Notion is synonymous with idea, concept, and perception.</p> <p>(First part of my working definition) <i>Active self-transcendence can be described as matter developing in a process of becoming whereby the higher levels are orientated in terms of an ever-increasing complexity with and through the lower levels of matter, giving rise to something substantially new, a leap into something essentially higher.</i> (32)</p> <p>1.1. The Unity of All Things Monism, the idea that reality is ultimately composed of one basic kind of stuff. (85)</p> <p>1.2. Hierarchical Complexity: Higher and Lower. (87-90) Rahner uses the term 'higher' and 'lower', including the term 'complexity' to characterize a process of active self-transcendence. I also pointed out the inclusiveness of Rahner's notion where in <i>Foundations</i>, he described active self-transcendence as the "transcendence into something substantially new, a leap to something <i>essentially</i> higher."³⁶³</p> <p>1.3. No Monolithic Law (90)</p> <p>1.4. Patterns Across Levels of Emergence (90-91)</p>

³⁶² The characteristics of emergence can be found in pages 57-63.

³⁶³ This was mentioned earlier in pages 20 and 32.

1.1. The Unity of All Things

Monism, the idea that reality is ultimately composed of one basic kind of stuff, is important to the concept of emergence. This idea becomes relevant when the explanations of physics are not sufficient to explain what exists. There are a variety of ways in which this idea can be expressed. First, Clayton follows theologian and biochemist Arthur Peacocke and speaks on the idea of “emergentist monism.” According to Clayton, “this process of hierarchical structuring [that] takes place over time: Darwinian evolution (and some forms of cosmological evolution) move from simple to the more complex.”³⁶⁴ Another is a means to address the concerns about Descartes’s body-mind dualism. Clayton speaks of “emergentist dualism,” which “asserts that really distinct levels occur within the one natural world and that objects on various levels can be ontologically primitive (can be entities in their own right) rather than being understood merely as aggregates of lower-level, foundational particles (ontological atomism).”³⁶⁵ As noted earlier, Gregersen states that this description allows Clayton to have the “advantage of seeing the emergence of the human mind as continuous with other sorts of self-reproducing systems.”³⁶⁶ Monism also agrees with Morowitz’s twenty-eight distinct levels of emergence, which I described in the previous chapter.³⁶⁷ However, I adhere to the idea of monism because emergence holds that there is a point from which everything began (i.e., the Big Bang), and emergence accounts

³⁶⁴ Clayton, *Mind and Emergence*, 60.

³⁶⁵ Ibid., 63.

³⁶⁶ Gregersen, “Emergence and Complexity,” 776.

³⁶⁷ Refer to page 60.

for plurality in its hierarchy of systems. The essential idea is that the natural world is one and continuous, not disparate or dualistic.

The position of monism can strengthen Rahner's position on the unity of all things, even if that unity originates from a divine being. Consider Rahner's concept of the intrinsic unity of spirit and matter in the human person.³⁶⁸ It is a position similar to that of monism, which maintains that the universe is ultimately composed of one basic kind of stuff. When Clayton uses the term "emergentist pluralism," it allows him to synthesize the unity of the body with the emergence of the mind. Rahner, as I pointed out in chapter one, states that the "Christian professes in his faith that all things, heaven and earth, the realm of the material and of the spiritual, are the creation of one and the same God."³⁶⁹ If everything in the universe originates from God, then this means that all things in their variety "proceed from *one* cause."³⁷⁰

According to Rahner, "It also means that this variety manifests an inner similarity and commonality, and that this variety or differentiation forms a unity in its origin, its self-realization and its determination – that is, it forms a *single* world."³⁷¹ This framework allows Rahner to claim that the human person is a part of the matter of creation that has become conscious. Spirit and matter are "mutually related and inseparable elements of the

³⁶⁸ Rahner, *Foundations of Christian Faith*, 182.

³⁶⁹ Ibid., 181.

³⁷⁰ Ibid.

³⁷¹ Ibid., 182.

single person,” they are not “reducible to each other.”³⁷² Rahner sees the unity of all things and notes that “it is the intrinsic nature of matter to develop towards spirit.”³⁷³

1.2. Hierarchical Complexity: Higher and Lower

Hierarchical complexity is a point that was highlighted at the end of chapter one. It relates to the point Rahner makes about active self-transcendence, which is similar to the perspective of emergence, and it pertains to complexity. Rahner uses the terms ‘higher’ and ‘lower’, including the term ‘complexity’, to characterize a process of active self-transcendence. In the first chapter, we saw Rahner relating active self-transcendence to the development of biologically organized materiality, which is orientated in terms of an ever-increasing complexity.³⁷⁴ I also pointed out the inclusiveness of Rahner’s notion where, in *Foundations*, he described active self-transcendence as the “transcendence into something substantially new, a leap to something *essentially* higher.”³⁷⁵

This notion of a hierarchy of levels, systems, or complexity agrees with Rahner’s position about a growing complexity of matter that transforms into something substantially new, that leaps to something *essentially higher*. This is also related to the perspective of strong or ontological emergence. Additionally, the idea is apparent in Gregersen’s description of *Emergence*⁴, in Clayton’s description of emergentist pluralism, and, of course, in the *Hierarchical Complexity*, which this thesis presents as a keystone in the perspective of emergence.

³⁷² Ibid., 184.

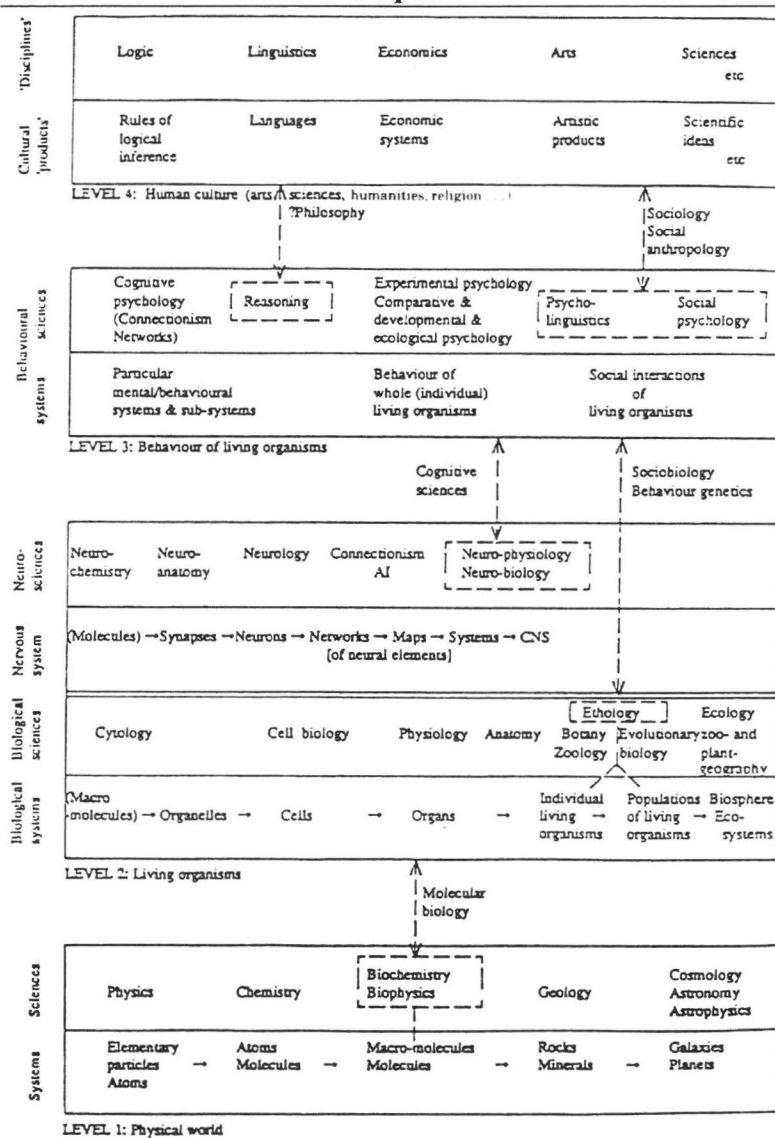
³⁷³ Rahner, *Foundations of Christian Faith*, 184.

³⁷⁴ Refer to page 32.

³⁷⁵ Rahner, *Foundations of Christian Faith*, 185.

In table 8 below, Peacocke presents a classic perspective on the lower and the higher and on the hierarchy of disciplines (complexity). Vertically, Peacocke's series ranges from the physical to the cultural and includes the biological and the behavioral. Horizontally, Peacocke lists each emergent phenomenon at its respective level: everything in the physical world is constituted of matter-energy in space-time, the behavior of living organism is the focus of behavioral sciences, and so forth.

Table 8: Hierarchies of Discipline



Source: Peacocke, *Theology for a Scientific Age*, 217. (CNS = central nervous system, including the brain.)

Peacocke states that level 4 is meant only to indicate some of the aspects of human culture, while in levels 1 to 3, he gives examples of the systems that correspond with their scientific disciplines. In level 2, he elaborates on the part-whole hierarchy of levels of organization within the nervous system.³⁷⁶ Theologian and physicist Robert Russell states that the vertical axis, which describes increasing complexity, makes two claims: “1) lower levels place *constraints* on upper levels (against ‘two worlds’ treatments that make them autonomous), but 2) upper levels are *emergent* and cannot be reduced entirely to lower levels (against ‘epistemic reductionism’ that evacuates upper levels of novel claims about the world).”³⁷⁷ For example, “physics places constraints on biology: no acceptable biological theory can contradict relativity or quantum mechanics.”³⁷⁸ Russell adds that “at the same time no theory in biology can be reduced entirely to theories such as relativity or quantum mechanics in physics. Instead some of the processes, properties, and laws of the upper level are emergent in nature.”³⁷⁹

Russell emphasizes that the horizontal axis of the diagram is unique to Peacocke’s insight. Peacocke ranks the “natural phenomena in terms of their increasing size within the same epistemic level. Thus physical systems at the bottom of the diagram range from elementary particles to galaxies.”³⁸⁰ Peacocke’s diagram is but one visual demonstration of the degree of emergence from the lower to the higher, and it reasserts the perspective of monism in emergence. Peacocke’s diagram on the hierarchical complexity strengthens

³⁷⁶ Peacocke, *Theology for a Scientific Age*, 214.

³⁷⁷ Russell, *Cosmology*, 7.

³⁷⁸ Ibid.

³⁷⁹ Ibid.

³⁸⁰ Ibid.

Rahner's notion about the essential unity of all things and about the increase in complexity that results in something that is substantially new, something that leaps to a higher *nature*.

1.3. No Monolithic Law

If we accept both active self-transcendence and emergence as a philosophical position, then there should not be a *monolithic law* for both viewpoints. This will allow one to explore and discern patterns in the transitions between sciences. The hierarchical levels and Morowitz's work give us a sense of the broadness of the universe. Rahner's goal in his notion was to say how something can increase in complexity and how this increase gives rise to something new. This notion is not meant to be confined within a specific scientific theory. The essential point of Rahner's notion is to state that it is the creative dynamic power of the absolute being that makes active self-transcendence possible. To rephrase Clayton's statement on this earlier, that which can constitute the process of active self-transcendence within the scientific perspective of emergence should be viewed as a term of family resemblance.³⁸¹

1.4. Patterns across Levels of Emergence

Understanding *patterns across levels of emergence* can help one to grasp how something can emerge, develop, or leap into something essentially higher. The patterns can also show more concretely the common traits that are to be found in the evolution of matter and of living and spiritual beings. In the second part of chapter two, I demonstrated how studying the patterns across levels of emergence can enrich what one can understand about what constitutes the human person. The relationship and interaction of the human being

³⁸¹ Refer to page 61.

with the forces outside of him or herself resulted in language, literacy, culture, diversity, and openness. This is close also to the classic example of Campbell's downward causation, as it manifests a characteristic of *downward causation*, namely, that we are shaped by our environment.³⁸² Deacon offers more on this with his view on self-organization, auto-catalyst, and autopoiesis.³⁸³

Rahner says that it will be ideal if we can show more concretely what common traits are to be found in the evolution of material, living, and spiritual beings towards a higher dimension of life.³⁸⁴ Integrating patterns across levels of emergence can achieve this. For me, understanding the patterns across levels of emergence include integrating different scientific theories. For example, one branch of science cannot do justice to the understanding and implications of Peacocke's hierarchical complexity which we have seen earlier. It is only by understanding the patterns across levels of emergence with its different scientific theories that we can have an enriched understanding of the universe we live in and the amazing condition present from the beginning of time that gave rise to life and to the conscious human person.

2. Clarifications

I have endeavored to show that the perspective of emergence is broad. Can the same be said about the notion of active self-transcendence? I believe the answer is yes. Oliver Putz, a professor of religious studies, offered a critique on Rahner's argument about matter

³⁸² Refer to pages 62-63.

³⁸³ Terrence Deacon, *Incomplete Nature: How Mind Emerged from Matter* (New York: W.W. Norton, 2013).

³⁸⁴ Rahner, "Christology Within Evolutionary View," 168.

developing into life and, subsequently, into the human person.³⁸⁵ Response to this critique helps to clarify the broadness of Rahner's argument.

Putz writes, "Rahner argues for a direction of evolution that leads inevitably to human beings, and he further insists that the natural sciences would have to agree."³⁸⁶ Putz seems to be over-reading Rahner. While Rahner does say that "there is no reason to deny that matter should have developed towards life and towards man," it does not seem that Rahner is 'insisting.'³⁸⁷ Furthermore, Putz states, "Rahner's line of reasoning resembles an ontological proof in that it simply presupposes that nature comes to itself in the human being, in which case Rahner is quite correct: the presence of man cannot be chance, but only fulfillment of the teleological process of evolution."³⁸⁸ He adds, "There is no reason to accept the assumption."³⁸⁹ According to Putz, "what Rahner has demonstrated convincingly is that what is required for nature to come to itself is a conscious creature. As we have seen, there are more conscious species than man, and so his conclusion seems not to hold up."³⁹⁰ Rahner does not seem to be making an argument resembling an ontological proof like what we would see in the work of Thomas Aquinas, though it could be argued that his work follows the pattern of Aquinas. There is certainly a logical reasoning to how Rahner argues his point. Rahner was explaining how the human person arrives at

³⁸⁵ Oliver Putz, "Evolutionary Biology in the Theology of Karl Rahner," *Philosophy and Theology* 17, no. 1/2 (2005), 100. The argument Putz refers to is found in Rahner, *Foundations of Christian Faith*, 185-186.

³⁸⁶ Ibid., 100.

³⁸⁷ Rahner, *Foundations of Christian Faith*, 186.

³⁸⁸ Putz, "Evolutionary Biology," 101.

³⁸⁹ Ibid.

³⁹⁰ Ibid.

consciousness through the process of active self-transcendence by integrating an evolutionary perspective. Nowhere in his writings does Rahner dismiss consciousness in other creatures. In fact, Rahner's essay in *Theological Investigations* proves that he does consider the evolution of all other creatures. He says that he was "presupposing the extreme in evolution as a given or as a hypothetical assumption of the natural scientist, and we are asking only whether something of this sort must be rejected by theology or not (The emergence of the human being will receive special consideration later)."³⁹¹ And he asks,

Is a continuous development of the cosmos from its simplest and most original components right up to its present differentiation and complexity, the realm of living being included, acceptable to Christian faith in such a way that it can leave this whole evolution to natural science as a thesis or hypothesis, and then, at most, afterwards include this evolution in a Christian conception of the world?³⁹²

Rahner answers 'yes' to his own question and presents a framework of active self-transcendence, and he specifically states that he is not yet considering the human person in that section of his argument. He writes,

Our answer is yes.... Each in its own stage can become something else, can change and become "more" ("higher"), whereby this "more" can of course be quite different, cannot, however, be excluded in the development in favor of simply "being different," regardless of whether such a being different would really contain fewer metaphysical questions than a "being more."³⁹³

Rahner does consider the evolutionary leap "of development to animal consciousness," and he thinks that it is a "sufficiently elevated organization of matter."³⁹⁴ Despite the sensitivity of the debate on the compatibility of the teachings of evolution and the Christian

³⁹¹ Rahner, "Natural Science Reasonable Faith," 38.

³⁹² Ibid.

³⁹³ Ibid.

³⁹⁴ Ibid., 40-41

conception of the world, Rahner still applies the notion of active self-transcendence to all creation, including animals.³⁹⁵

While I have argued that the scientific perspective of emergence can add robustness to Rahner's notion, it should be obvious that there is one major difference between the two: the scientific perspective of emergence stops at the level of science, while Rahner attributes active self-transcendence or emergence to the dynamic power of the absolute being we call God. It is the power of the absolute that causes matter to actively self-transcend. For Rahner, this is possible because God has been immanently present in creation. It is what he states that Christian theology formerly calls 'conservatio' and 'concursus'.³⁹⁶

4. Conclusion

In this chapter I have argued that the scientific perspective of emergence can add robustness to Rahner's notion of active self-transcendence. I demonstrated how the meanings and characteristics of emergence can strengthen Rahner's notion. I also showed that both positions share an inherent commonality and that the characteristics that define emergence are also present in active self-transcendence. I also touched on monism, hierarchical complexity, no monolithic law, and patterns across levels of emergence. Additionally, in order to demonstrate the broadness of Rahner's argument, I responded to a critique put forth by Putz.

The final point I wish to make is that Rahner was limited by the science of his time. He was working with the discoveries of science that was about fifty years old. Although

³⁹⁵ Rahner, "Natural Science Reasonable Faith," 37-41.

³⁹⁶ Refer to pages 23-24.

we now know far more about the human person, Rahner's notion of active self-transcendence stills holds, and it helps us to understand divine action within an evolutionary perspective. Rahner's notion is still relevant and is made even richer and more robust by the scientific perspective of emergence.

Conclusion

A Step Further: On Sacred Ground

We have explored how the scientific perspective of emergence can enrich Rahner's notion of active self-transcendence. The question of what this means and its implication seems to be the next logical step. Other than contributing to the relationship between theology and science, this thesis can also relate to how we can respond to God and to the world we live in today.

In the first chapter, I showed how Rahner states that the human person faced themselves as a question. In facing themselves as a question, human persons are already *quodammodo omnia* (in a certain way everything). The Book of Exodus tells us that God's name is "YHWH," which means, "I-AM-WHO-AM" (Exodus 3:14). It tells us that God simply 'is'. I agree with Rahner that human persons face themselves as a question. The question "I AM?" is deeply felt in one's being. These questions which never cease are the grounds of one's transcendence into the horizon of mystery. The person who is faced with the question of "I AM?" reaches out to the absolute being who simply 'is'. There is an openness in one's orientation which Rahner calls the pre-apprehension (*Vorgriff*) of being. One stretches out beyond oneself into one's horizon, but the horizon recedes further and further the more answers one discovers. If this can be considered as a continual increase of one's being, then the process of becoming is still ongoing. In my view, Rahner integrated an evolutionary perspective into a dynamism that is still ongoing in creation.

Part A of the first chapter explained what emergence entailed while part B showed an aspect of how we can conceive this on-going process of becoming. Part B demonstrated that integrating theories across various scientific disciplines can tell us *how something, due*

to an increase in complexity, can emerge from the lower to become something essentially higher, often in new ways that are unpredictable, irreducible, novel, and surprising. The starting point of emergence is similar to a point made by Rahner. The scientific perspective of emergence is fueled by human persons facing themselves as a question. In this respect, the reductionist perspective is just too poor an answer for the question of “I AM?” and why there is ‘something’ in the universe instead of ‘nothing’. It is what Hawking and Mlodinow state in the first chapter of their book, “To understand the universe at the deepest level, we need to know not only how the universe behaves, but why. Why is there something rather than nothing? Why do we exist? Why this particular set of laws and not some other?”³⁹⁷

What can both active self-transcendence and emergence mean for us as human persons? Clayton points out that the logical conclusion to the trajectory of emergence of the human person is freedom and self-transcendence. He states, “We have found that the pattern of emergence points toward continuously new forms of complexity and causality; it is the nature of the evolutionary process to be continually self-transcending toward ever new forms of novelty.”³⁹⁸ He argues that the “more complex the life form, the more openness it reveals and the more it transcends its immediate environment.”³⁹⁹ “Homo sapiens,” Clayton claims, “with its ability to create inner models of imaginary worlds radically different from the actual one, is undeniably the most radically self-transcending species to date.”⁴⁰⁰

³⁹⁷ Hawking and Mlodinow, *The Grand Design*, 10.

³⁹⁸ Clayton, *In Quest of Freedom*, 141.

³⁹⁹ Ibid.

⁴⁰⁰ Ibid., 141-142.

There is then a dynamism or an internal movement that is happening within one's mental processes that affects one's being. It is not a stretch then to consider that having faith as a believer opens the horizons of one's life. For example, faith can contribute to the quality of one's marriage and family life. Imagine a faith that is related or integrated with a scientific perspective of emergence. Applying the eyes of faith as a believer of the absolute presence on the idea of 'becoming' and that the human person is forever in the process of self-expanding tells us that we are part of a divine creative movement even if we cannot fully grasp what that is. Borrowing a phrase by Rahner, there is a sense that we are grasped by the mystery of the divine.

Rahner tells us that "from the outset God is lovingly seeking in freedom to bestow himself and, because he so wills in freedom, because he wills grace, he must create a 'nature' to which he can impart himself as free love."⁴⁰¹ Thus, "nature is, because grace has to be."⁴⁰² In other words, we 'are' because grace has to 'be'. The creative power of God is already intrinsic in creation, in all life, in culture, and in every human person. We are all made of the same stuff of creation and have become aware and achieved consciousness. Grace is something present in all creation and at the heart of all existence. All conscious creatures can now recognize and accept God's offer of love, but the difference is in our 'acceptance' and our 'belief'. Rahner tells us that the purpose of creation is to be divinized, and Christ, who entered the evolutionary process, was the first to accept this offer of love.⁴⁰³ The way is now open to us. Freedom is in our decision on

⁴⁰¹ Karl Rahner, *Theological Investigations*, vol. 19, *Theology of Worship*, trans. Edward Quinn (London: Darton, Longman and Todd, 1984), 144.

⁴⁰² Ibid., 144.

⁴⁰³ Rahner, *Foundations of Christian Faith*, 192-195.

whether or not to participate as an autonomous and “responsible person(s) in relation to the environment.”⁴⁰⁴

I can see how Rahner can claim that the basic and ultimate thrust of Christian life is not from the fact that being Christian is a special instance of humankind but that “a Christian is simply man as he is.”⁴⁰⁵ Rahner tells us that “the real and total and comprehensive task of a Christian is to be a human being, a human being of course whose depth are divine.”⁴⁰⁶ I cannot help but think that Rahner’s evolutionary view of the world shaped his understanding and also gave some shape to his theology. From my perspective, there is some ‘grounded-ness’ to his writings that is intelligible and which resonates with the realities of life.

One notable point in Rahner’s notion of active self-transcendence and the scientific perspective of emergence is that there is a sense of kinship that we all emerged from the same place, namely, God. This dimension can speak to how we can respond as responsible persons. Theologian Elizabeth A. Johnson expresses this idea when talking about “the community of creation” paradigm in her work *Ask the Beasts: Darwin and the God of Love*.⁴⁰⁷ Her paradigm revisits and abandons the model of dominion found in the first chapter of the Book of Genesis. She writes, “In a felicitous development, biblical scholars in our day have discovered that the paradigm of dominion is not the only nor even the main

⁴⁰⁴ Gregersen, “Emergence and Complexity,” 777.

⁴⁰⁵ Rahner, *Foundations of Christian Faith*, 402.

⁴⁰⁶ Ibid., 402.

⁴⁰⁷ Elizabeth A. Johnson, *Ask the Beasts: Darwin and the God of Love* (London: Bloomsbury, 2014).

view proposed by the Bible.”⁴⁰⁸ She states that “more common is the paradigm of the community of creation, based on the understanding that humans and other living beings, for all their differences, form one community woven together by the common thread of having been created by God.”⁴⁰⁹ The community model emphasizes “our theological human identity as created, our biological embeddedness in the natural world, and our reciprocal interdependence with other species and the life-giving systems that support us all.”⁴¹⁰ Johnson argues that our responsibility as human persons is “best understood as stewardship and responsible care,” and this is “one among many important exchanges we have with the natural world.”⁴¹¹ She tells us that “human responsibility is exercised within creation, in relation to other fellow creatures who are created as we are, and upon whom we depend for our own lives. As a role among creatures, it is shepherding for which we are ultimately responsible to God.”⁴¹²

I started this project with a pastoral concern in mind, which is that our practice of faith can be intelligible with the realities of life, the processes of nature, and with the discoveries of science. However, working on this thesis has also given me a greater appreciation of the sacredness of all life and of the miracle that creates the condition for the emergence of human life, which calls for a response. In the encyclical *Laudato Si'*, the Pope tells us that our uniqueness demands that we take responsibility for our neighbor and for our common home. Besides helping to improve the quality of life for all humans, we

⁴⁰⁸ Johnson, *Ask the Beasts*, 261.

⁴⁰⁹ Ibid.

⁴¹⁰ Ibid., 280.

⁴¹¹ Ibid.

⁴¹² Ibid.

must address the problems that threaten our common home such as air and water pollution, climate change, environmental degradation, and the loss of biodiversity. He writes, “If the simple fact of being human moves people to care for the environment of which they are a part, Christians in their turn ‘realize that their responsibility within creation, and their duty towards nature and the Creator, are an essential part of their faith.’”⁴¹³

Epilogue

The universe is an open question, a place of deep mystery. There can only be questions because there is someone to ask; there can only be mystery because there is someone to ponder it. We human beings are knowers: we know that we know, we also know that we do not know, though some may argue that most people do not know that they do not know. When I read Rahner last year, he made a point that struck me to my core. Our questions drive us, open our horizons, and they are the ground from which we transcend into the mystery of God. This led me to examine Rahner’s notion of active self-transcendence within the scientific perspective of emergence.

Active self-transcendence as I saw it is as follows: *Active self-transcendence can be described as matter developing in a process of becoming whereby the higher levels are orientated in terms of an ever-increasing complexity with and through the lower levels of matter, giving rise to something substantially new, a leap into something essentially higher. This is made possible through the creative power of the absolute fullness of being that is*

⁴¹³ Francis, *Laudato Si'*, Chap. 1, no. 64.

*so intrinsic to the finite existent that this finite existent is empowered to achieve a real and active self-transcendence.*⁴¹⁴

I was amazed at how close the discussion of emergence is to Rahner's notion. My own working definition of emergence is as follows: *Emergence is a scientific perspective by which we integrate the evolutionary perspective to describe how something, due to an increase in complexity, can emerge from the lower to become something essentially higher, often in new ways that are unpredictable, irreducible, novel, and surprising.*⁴¹⁵

I hope that my thesis raises more questions than it answers. I intend to continue studying the openness of the human person. I want to know more about brain science that tries to explain this wide horizontal dimension and its implications for theology. There are also, for me, more practical questions, such as those about grace, sacraments, and about how God acts. In the meantime, Rahner's notion of active self-transcendence can fill one with hope and give one a positive outlook for the present and for the future.

⁴¹⁴ Refer to page 31.

⁴¹⁵ Refer to page 78.

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